THE AHEAD JOURNAL

No. 3

A Review of Inclusive Education & Employment Practices

ahead
Association for Higher Education Access & Disability

April 2016

This electronic journal is not a newsletter nor is it an academic journal. It is a space for you working out there 'on the ground' to share innovations and your examples of good practices that deserve to be showcased.

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Welcome to Journal Number 3

from Ann Heelan, Executive Director AHEAD

The vision of AHEAD is shaping a future where students with disabilities can succeed. We recognise that employment is a critical piece in that success, as graduates with disabilities are no different from their non disabled peers in that they want well paid careers after their years of study. The recently published National Skills Strategy 2025 states that 'unemployment correlates with the level of educational attainment', so we could assume that the career opportunities of graduates with disabilities would be very good as they have the same first and second class degrees as other graduates.

However this is not the case. Many graduates with disabilities are losing out on highly skilled and highly paid career opportunities because of the subject and career choices they made early on in second level education. We know that this is the case because in higher education, these students are over represented in arts/humanities and the social sciences, while being under represented in the very areas identified in Ireland's National Skills Strategy as areas of future demand (AHEAD 2016).

The sectors identified as having high skill demands in the coming years are clearly identified in the National Skills Strategy 2025 as: the sciences, finance, ICT, technology, engineering, health sciences, agri food industry, retail & marketing, and construction. These sectors are seeking highly skilled graduates as 85% of jobs created in the coming years will require high tech skills such as ICT and data analytics.

So the question is, why are students with disabilities not choosing these sought after careers? How can they be encouraged to shift their career aspirations from arts into a broader range of careers?

The answers are complex, as we know from other research carried out by

AHEAD, the OECD and others that the education system is riddled with potential pitfalls for students with disabilities, and that they are frequently encouraged to drop essential subjects such as maths, languages and sciences, not because they do not have capacity and aptitude to do them, but because the system lacks the infrastructure to include them.

Often, teachers have not been trained in inclusive practice, the technology is inadequate and the examinations system unnecessarily bureaucratic. For example, very few students with text disabilities such as visual impairment or dyslexia are granted the use of computers in state examinations. Furthermore, guidance professionals are not confident in giving career advice to students with disabilities, and too many end up in generic type subjects like arts and social sciences, while dreaming of another path. The system is creaking and needs to change.

This edition of the AHEAD Journal shares stories from practitioners who are change agents and who are doing things differently, changing thinking, developing innovative approaches to improve the experiences and opportunities of students with disabilities. It will give you a brief glimpse of the AHEAD Symposium on Universal Design in DCU in March and the creativity of the students in Blanchardstown in giving us a visual representation of their experiences of education. We would like to hear more of these stories to share with you in further editions.

April, 2016

From the Editor

Barbara Waters

Firstly, a big thank you to all our contributors. We are delighted with your enthusiasm to share practice, and I hope this will encourage others. We are beginning to 'unpeel' the practice of Universal Design in higher education and we hope you will find this helpful in your day-to-day work.

Ann Heelan has drawn attention to the opportunities for disabled graduates in the STEM subject areas, and we have some great examples in this Journal. Once again we have some illustrations from student work and a poem, part of the exhibition curated by AHEAD at their March conference. If you didn't see it you can read more about it below.

Many thanks to Nicole Ofiesh for presenting her thorough research related to making exams more accessible and understanding the underpinning cognitive processes. We are publishing her work in two installments, the first part in this Journal and the second part in the next Journal, autumn 2016.

Lisa Padden shares her work on supporting colleagues in putting the principles of Universal Design into practice in classrooms and lecture theatres.

A conference in June 2016 marks the final phase of the Universal Design in Higher Education – License to Learn, Erasmus + project, **http://udll.eu/**, in which AHEAD has been a partner. The conference will highlight the range of helpful outputs, including in print and multimedia. Find out more about the conference at the end of June in Ghent, Belgium here **http://howest.be/udll/**

Do keep sending in your ideas for articles. No need to wait, we are happy to hear from you at any time, and to offer help and advice. The initial contact is Lorraine Gallagher - **lorraine.gallagher@ahead.ie**

I hope you enjoy a good read.

Barbara Waters, Editor
April, 2016

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Widening Participation and Supporting Students in Electrical and Information Engineering

Anthony Ward

After 18 years in industry, Tony joined the Department of Electronics at the University of York (UK) and is now a Senior Lecturer in Engineering Management. He has an MBA and is a Chartered Engineer. He is the leader of the Engineering Management Research Group and of the taught MSc in Engineering Management. His research interests lie in engineering education and entrepreneurship. Past roles include Provost of Alcuin College, Director of the White Rose Centre for Excellence in Teaching and Learning in Enterprise (CETLE) and President of the European Association for Education in Electrical and Information Engineering (EAEEIE).

Dr Ian Grout

Ian Grout is a lecturer in the Department of Electronic and Computer Engineering in the University of Limerick, Ireland. He received his PhD from Lancaster University (UK) in 1994 and has been a lecturer at the University of Limerick since 1998. His interests include microelectronic circuit design for testability, remote engineering, internet based laboratories and education technology.

Dr Laura Grindei

Laura Grindei is Associate Professor of Informatics at the Technical University of Cluj-Napoca, Romania. She graduated from the Faculty of Computer Science at the Technical University of Cluj-Napoca and she received her PhD in Electrical Engineering from the same university in 2005. She teaches students at Bachelor level in: C/C++ programing, managerial informatics and introduction to databases for electrical engineering. Grindei also teaches 'technologies used in multimedia applications design' at Masters level. Her current research interests include programming languages, multimedia technologies, eLearning and web design.

Four years ago a group of members of the European Association for Education in Electrical and Information Engineering (EAEEIE) set about planning the next Thematic Network project it would seek European Union funding for. The Association has a very successful history of such funded projects since the start of the very first project in 1996. All the projects have a focus on building understanding and sharing of knowledge in the Electrical and Information Engineering (EIE) discipline set within Higher Education across Europe. The latest project was titled 'Strategic Alignment of Electrical and Information Engineering in European Higher Education Institutions' or simply SALEIE.

The project aims were to investigate and explore some of the challenges that face European Higher Education in Electrical and Information Engineering (EIE) in meeting both the technical demands of the challenge areas and in addressing how EU Higher Education Institutions (HEIs) can create sufficient appropriately trained graduates.

So why is this project, and its findings, so relevant?

It is recognised that there is a shortage of qualified EIE engineers to meet future workforce needs. This is recognised at the UK National and European levels (Perkins, J. 2013). Studies have also shown that the conventional education pipeline will not be able to fill the forecast shortfall (Ward, A. 2015). The consequence is that we need to open up the education pathway to ensure no individual is unable to engage with it. Such an objective should already be met by equality regulations and the widening participation agenda, and to some extent it is in some areas. But education programmes in EIE have one or two additional challenges to most other HE programmes - namely they involve laboratories, and often work placements. It is in these areas where the application of Universal Design principles, whilst remaining practical, becomes challenging. Here is where looking at some of the SALEIE project findings might be of use.

The background to the SALEIE Project

The project team comprised 45 partners in total, 44 from European HEIs and one from Russia. The EU partners are from 24 different countries (in Figure 1 partner countries are shown in dark blue). Individual partners have expertise in one of three areas: technical expertise in one of the key global challenge areas; the governance of programmes within HE; or widening participation or student support.

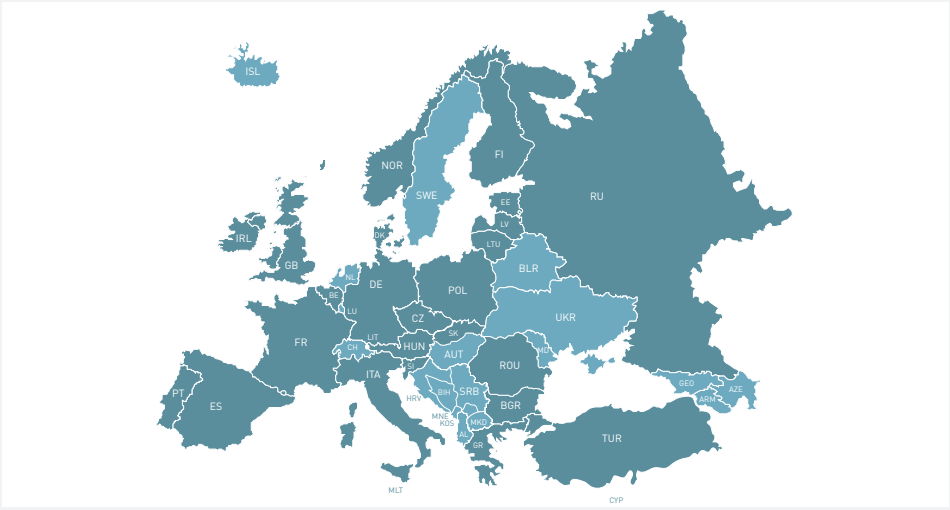


Figure 1. The SALEIE Project Partners

The partners came together to explore these three closely interconnected topics as they impact EIE programmes. The important element of the project, for the purposes of this paper, is the issue of accessible education for students with disabilities. The ethos of this section of the project is represented by the keyword collage shown in Figure 2.

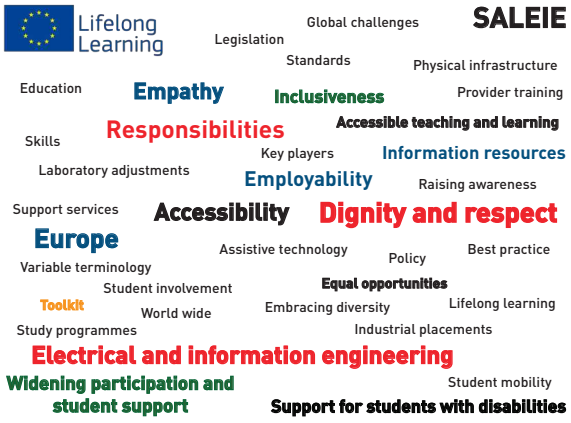


Figure 2. The project's students with disabilities ethos

In each of the work-packages one of the first activities was a survey across the partnership to understand the current state of play. The results of the disability support survey revealed the wide diversity of approaches to student support across Europe. It is certainly not true to say that all students are treated equally. Who decides on what allowance and/or adjustment should be made for any individual student varies between countries. Where there is an established disability support system, there will be an institutional policy and a central student support service that verifies claims and decides the adjustment. In countries where there is no disability support system the adjustment is at the discretion of the academic teaching each module. Adjustments, in the latter case, can clearly be different between modules as they can be between students, departments and institutions.

A consequence of this 'diversity' is that any student with a disability/impairment wishing to go on a mobility placement may end up with adjustments that could be clearly and equitably decided in their host institution which are more uncertain and variable than at their home institution. This could be particularly problematic in laboratory activities and practical industry placements.

Adapting teaching materials for students with disabilities or learning difficulties

Designing education for equal access is focused on students who potentially have broad ranges with respect to ability, disability, age, reading level, learning style, native language, race, ethnicity, and other characteristics (University of Washington, DO-IT Center). It can be applied to all aspects of instruction, including class climate, interaction, physical environments and products, delivery methods, information resources and technology, feedback, and assessment:

1. Educators should consider the potential variation in individual skills, learning styles and preferences, age, gender, culture, abilities, and disabilities as they select appropriate strategies

for the delivery of instruction and then apply Universal Design to all course activities and resources. Specifically, the instructor needs to consider their potential diverse characteristics (e.g. with respect to abilities to see, hear, manipulate objects, read, and communicate) and then apply instructional strategies to all lectures, classroom discussions, group work, handouts, web-based content, labs, fieldwork, assessment instruments, and other academic activities and materials to maximise the learning of students with the wide variety of characteristics including disabilities. Monitoring the effectiveness of instruction through observation and feedback from all students, and particularly from those with disabilities, regarding their perception on assessing learning and modifying the course as appropriate, should improve the whole instruction process.

2. Ensuring that facilities, activities, materials, and equipment are physically accessible to and usable by all students, and that all potential student characteristics are addressed in safety considerations is a basic requirement. In addition, it is essential that course materials, notes, and other information resources are engaging, flexible, and accessible for all students. If computers or science labs are used, ensure that assistive technology for students with disabilities is available or can be readily acquired.

3. Using equal access principles benefits students with disabilities but also benefits their non-disabled peers. For example, the facility of closed captioning (subtitling) which came to the fore in television as a result of the signing of the Communications Act 2003; when applied to course videos extends access not only to deaf students, but also benefits learners with diverse needs, such as individuals with other learning disabilities or international students whose first language may not be English. Delivering content in alternative ways can improve instruction for students with a variety of learning styles and cultural backgrounds. Letting all students have access to class notes and assignments on a website benefits students with disabilities and everyone else. All this serves to increase

> the successful participation of individuals with disabilities in challenging academic programs such as those in science, engineering, mathematics, and technology.

Non-visible disabilities - such as specific learning disabilities, attention deficits, autism spectrum disorders, psychiatric impairments, Tourette's syndrome, seizure conditions - are not easily noticed. And often, individuals with these conditions do not disclose them. Therefore, in educational and work environments, it is good for practitioners to keep in mind that some people with whom they interact may have these conditions so that they can provide education and employment situations that are welcoming and accessible to individuals from these populations.

In addition, if we consider that access to learning is identified as a right supported by European legislation, it seems fundamental to adapt learning materials in order to make them accessible to all, regardless of particular student needs.

EIE Laboratories are a core curriculum component

Laboratories are a core component of all EIE programmes. For example, the ability of the graduate to construct circuits and undertake measurements of them is an essential engineering graduate skill. The problems noted above in respect of study abroad periods are magnified where students need to undertake practical work in the laboratory. In the SALEIE Project we identified five core aspects relating to the design and operation of laboratories that need to be considered, see Figure 3.

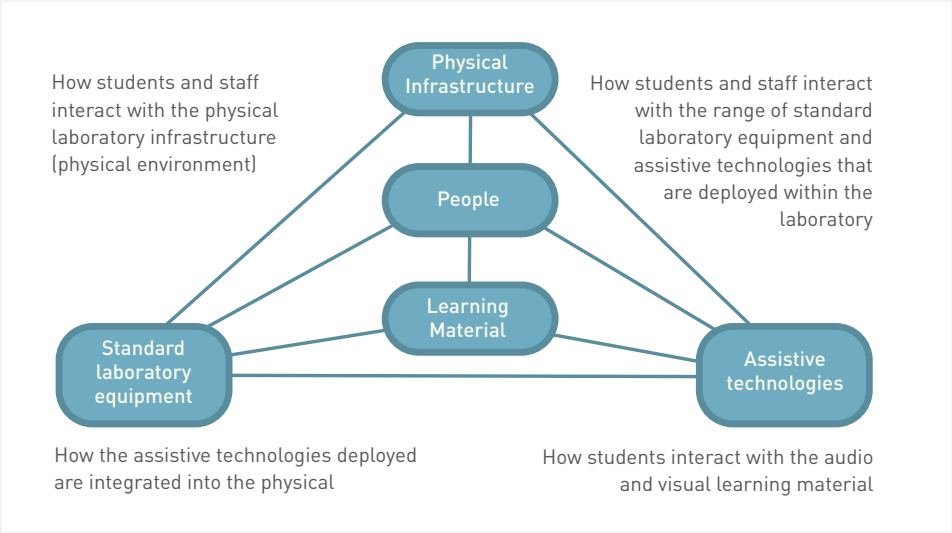


Figure 3. The five core design aspects of laboratories

The 'people' are the staff (academic, teaching assistants, technicians, administrative) and the students who collaborate within the laboratory environment. Whilst the main concern here is towards students with disabilities, the needs of these students and their non-disabled peers must be taken into account. Academic staff and technicians need to be aware of any disabilities students in the laboratory have – or be sufficiently trained to be sensitive to the impact disabilities have on ability and inter-personal interactions, noting of course, that many disabilities do not always have visible signs. Teaching assistants also need to be equally well aware and trained. Teaching assistants in laboratories are often postgraduate students which has the potential of opening the rather more complex matter of who can be told a specific individual has a disability.

A question that emerges from this is should all staff who are to be involved in laboratories be trained in the implications of all disabilities in readiness for students, or should they be trained to be able to help and support any student who exhibits what we might refer to as 'unconventional' behaviours? I am reminded here of the way business continuity planning is managed in large organisations – not every possible disaster scenario is modelled. The main reason for this is that the most likely disaster to happen is the one that was not planned for! Instead the focus is on outcomes such as loss of infrastructure, loss of utility, damage to reputation. It matters less what leads to these possible outcomes with a focus on dealing with them. A parallel approach could be taken to all staff training in laboratories – with a focus on the 'unconventional outcomes approach' such as:

a. inability of a student to gain access to the laboratory - ie. to actually get to the laboratory.

b. inability of a student to engage with the experiment - receive information about the objective and activities involved in the experiment, locate correct components, construct the physical parts, make necessary interconnections between parts, etc.

c. inability of a student to engage with the measurement and/or test equipment associated with the experiment - connect measurement and/or test equipment to constructed system, set equipment in correct way, take and record readings and results, etc.

d. inability of a student to communicate with student partner or staff - ask for help and guidance, discuss the experiment and results obtained with project partner or laboratory staff, produce written or oral report on the project for assessment purposes, etc.

A peripheral advantage of this approach is that the magnitude of the problem becomes much smaller and manageable, responsibility and training become more clearly attributable and definable and,

through this, a general resilience to student needs will be developed that will have additional benefits outside the laboratory.

The 'physical infrastructure' is the laboratory itself (physical building - access to and internal, along with the furniture, lighting and heating). Aside from the potential issues of whether all students can actually get to the laboratory itself and be safely evacuated from it in the case of an emergency, there are questions about bench height, from bench design such that a wheelchair can go underneath it so the student can actually work at it, to can they reach the back of the bench where it is most likely the power sockets are for the test equipment. To some extent this can be anticipated - a number of adjustable height benches could be introduced for example – but there is a necessary cost associated with such changes and cost changes that are anticipatory most probably come from a different budget to that which actually provides adjustments for specific registered students. The economic argument against such moves are fairly obvious.

The 'standard laboratory equipment' is the equipment that is used in the laboratory. Most commonly available test equipment is not specifically designed to act as an assistive technology, nor is it designed to work with assistive technologies. The project presents a number of videos and recordings documenting how students with serious mobility challenges are undertaking regular laboratory experiments. The capture and recording of results is another aspect relating to test equipment that can offer challenges.

The 'assistive technologies' are the technologies that the students use whilst within the physical infrastructure in order to undertake their studies. How compatible are these with the teaching and learning resources provided for the laboratory, how compatible with the formats of reporting on the laboratory experiment and, as stated above, with the test and/or measurement equipment?

The 'learning material' is the laboratory notes and supporting material (in audio and visual formats) which the student uses to complete the laboratory experiments and assignments. These should fall under the Universal Design approach and should be compatible with assistive technologies.

In summary, there is a whole sub-system of Universal Design principles that bear on the student experience and ability gain maximum benefit from laboratory experiments.

Students with disabilities in laboratories

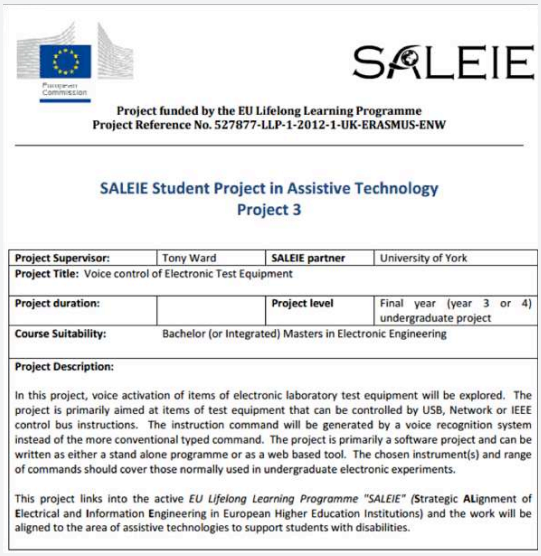
As a project team we recognised that there are a number of activities undertaken in the laboratory where two hands and fully working eyes are rather taken for granted. Ponder for a moment the following sample scenarios:

- You only have one arm and are trying to solder components to a printed circuit board. Even with two hands this is sometimes a challenge – holding the board, the component in place, wielding the soldering iron and offering the solder to the soldering iron tip for the right amount of time – I make that four hands! How do you solder?

- You are blind but need to know the value of a resistor or find a resistor of the right value. Resistors are either coded with different colour bands (axial devices) or have their value stamped on them (in the case of some surface mount devices) – neither of which you can see. You could connect it to an ohm meter but you can't see the display either. How do you measure the component value?

Assistive technologies are the generic obvious answer. We wanted to go further than this in the SALEIE Project so one of our outputs is a way of both solving these and other 'challenges' and raising the awareness of disabilities amongst the student population more generally.

On the project website we present a database of, initially, 15 final year individual project ideas, and in some cases projects that have already been undertaken by students that require the student to design and develop solutions to problems disabled students could face. For each there is a full description of the project, academic prerequisites, duration, academic level, see Figure 4. Successful projects have the potential of producing real commercial products as well as raising awareness generally.



SALEIE

Project funded by the EU Lifelong Learning Programme
Project Reference No. 527877-LLP-1-2012-1-UK-ERASMUS-ENW

SALEIE Student Project in Assistive Technology
Project 3

Project Supervisor:	Tony Ward	**SALEIE partner**	University of York
Project Title: Voice control of Electronic Test Equipment			
Project duration:		**Project level**	Final year (year 3 or 4) undergraduate project
Course Suitability:	Bachelor (or Integrated) Masters in Electronic Engineering		

Project Description:

In this project, voice activation of items of electronic laboratory test equipment will be explored. The project is primarily aimed at items of test equipment that can be controlled by USB, Network or IEEE control bus instructions. The instruction command will be generated by a voice recognition system instead of the more conventional typed command. The project is primarily a software project and can be written as either a stand alone programme or as a web based tool. The chosen instrument(s) and range of commands should cover those normally used in undergraduate electronic experiments.

This project links into the active *EU Lifelong Learning Programme "SALEIE"* (Strategic ALignment of Electrical and Information Engineering in European Higher Education Institutions) and the work will be aligned to the area of assistive technologies to support students with disabilities.

Figure 4. SALEIE Example Student Project in Assistive Technology

The SALEIE Project website

The project website is divided into sections, one for each of the main work-packages and one for the main project files, see Figure 5. The overall site includes an accessibility toolbar, which allows visitors to change the visual appearance to suit their needs or preferences. The Student and Staff Support Hub presents information on accessing higher education across Europe for students with disabilities. The SSSH's structure was developed as shown in Figure 6.

Figure 5.

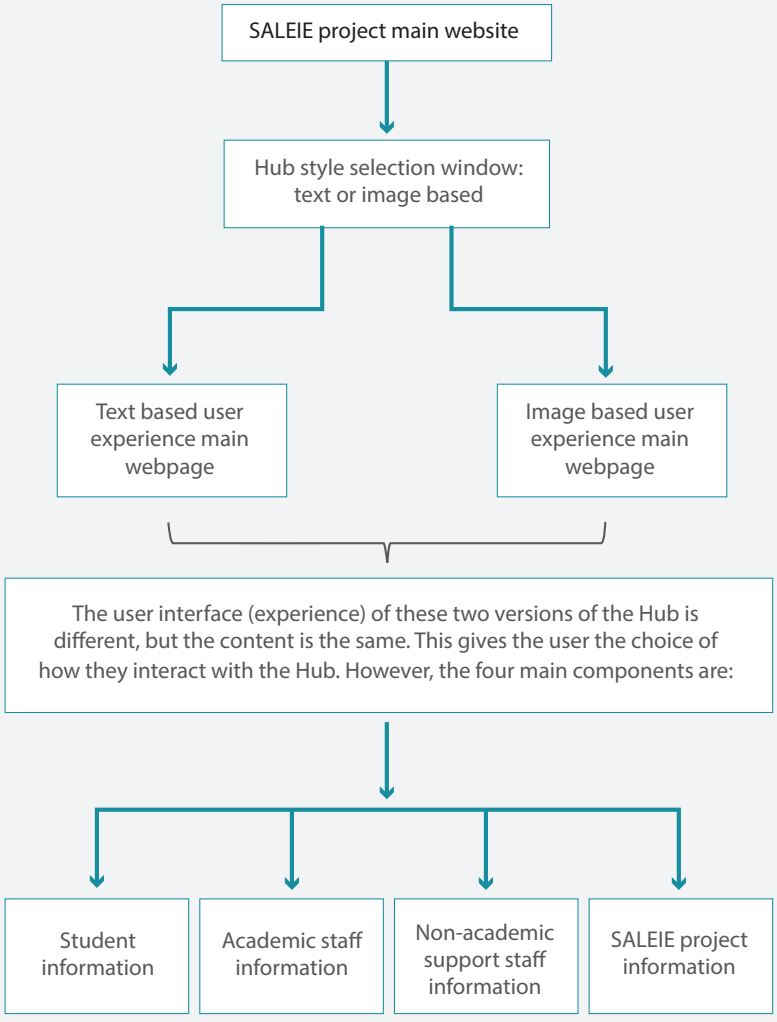


Figure 6. Student and Staff Support Hub top level website structure

The SSSH provides two ways in which the user can view the web pages depending on their preferences:

Text based approach which integrate accessibility icons that ensure navigation through the SSSH by viewing text descriptions, clicking on text links and listening to audio files. These web pages include only a limited use of images.

Graphics based approach which has the same content as the text based version above, but includes the use of clickable images for an enhanced visual appearance. This version integrates a mixture of interactive maps and clickable images and text to convey information.

Information is structured and displayed in the SSSH in 4 main categories: for students, academic staff members, staff supporting students with disabilities and SALEIE Project. As a whole, the website contains the following information:

- Charters and Legislation in EU countries
- National /Institutional Support in partner institutions
- Support and information for students and staff considering mobility across Europe (including Erasmus agencies)
- Sources of financial support
- Assistive Technologies for different types of disabilities: visual and hearing impairments, learning and mobility impairments, in total 78 different resources included
- Other projects that are linked to disabilities (22 European and 45 in the rest of the world)
- Experiences – information and links to 39 experiences (14 from project partners)

- Best practice examples – information on 30 examples of best practice in supporting students in HE identified within the project partners

- Adapting Teaching Materials – information on how educational materials can be adapted

- Laboratory Adjustments Information on how EIE laboratories can be adjusted to support learners with different requirements

- SALEIE Student Projects – details of the 15 projects mentioned above, for each there is a full description of the project, academic prerequisites, duration, academic level

- Training courses and events – information on 18 different training courses, conferences and events

As would be expected with any EU funded project, all the resources created are freely available and do not require any password to access them.

Conclusions

Laboratories are a core component of Electrical and Information Engineering degree programmes, as they are for most science, technology and engineering programmes. In themselves they present some significant challenges to any student with a disability. Compounding this with the very variable attitude towards adjustments for special needs when students go on international mobility programmes or industrial placements and it is not difficult to see where impediments lie. Five core aspects of laboratories are very briefly introduced and discussed in this paper to identify the areas where attention must be paid if the laboratory is to be an equitable place for all. The paper offers an 'unconventional outcomes approach' to laboratory design and how students with disabilities can be accommodated, not necessarily through adjustments made 'on-the-fly', but by careful planning and training using the 'unconventional outcomes approach' as the guide to effective support being available.

This paper also offered an overview of the resources available through the SALEIE Project website. This paper does not necessarily provide a full set of answers but hopefully opens the debate and starts all HEIs across Europe down the road to making the laboratory a welcoming learning zone for everyone.

Student and staff support hub - **www.saleie.co.uk/SSSH**

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University of Washington, DO-IT Center, **"Equal Access: Universal Design of Instruction,"** [Online]. Available: **http://www.washington.edu/doit/Brochures/Academics/equal_access_udi.html**

SALEIE Project website references

http://www.saleie.co.uk/

Videos and recordings documenting how students with serious mobility challenges are undertaking regular laboratory experiments: **www.saleie.co.uk/SSSH/video/Francois.mp4**

Student and staff support hub - **www.saleie.co.uk/SSSH**

Engineering Diversity: making placements real and meaningful

Mary Quirke, Assistant Director, Ahead

Mary Quirke has a keen interest in mentoring and empowering people to attain their personal goals. Mary works with employers on the WAM mentored work placement programme for graduates with a disability, delivery of training & consultative work with employers on disability and inclusion in the workplace. Mary recently presented in the Science Gallery on Exploring Engineering and STEM careers for students with disabilities. This article is based on one published in Engineers Journal, January 2016.

Today there is a growing awareness that if any profession is to be creative and on top of the game, then the right people make all the difference. Recent research 'Powering economic growth: Attracting more young women into Science and Technology' carried out by STEM Accenture Research, stated that the findings were not only important for the education sector but also for industry, if together, obstacles are to be removed which have so far served to minimise the involvement of young women in the STEM area. One of the many factors raised was 'influence ambiguity', that is, those who influence career aspirations might inadvertently contribute to assumptions and beliefs about who is the best 'fit'. We need to consider if this could also be the case for students with disabilities - do we really believe that they have something to contribute to engineering and STEM careers and do current engineers and employers contribute to these assumptions?

Currently there are almost 2,700 students with disabilities studying STEM courses with different talents, hopes and aspirations for their future careers (AHEAD Survey on Participation rates of students with disabilities in higher education in Ireland 2013/14). There are 975 students with disabilities in engineering courses alone that makes up just 6% of all engineering students. AHEAD's aim is to improve this figure and show students and future employers that engineering in fact needs all sorts of people.

Willing Able Mentoring (WAM) is a work placement programme run by AHEAD that aims to promote access to the labour

market for graduates with disabilities and build the capacity of employers to integrate disability into the mainstream workplace. It acts as a conduit of learning between higher education and the world of work in relation to the transitioning of graduates with disabilities.

There are many reasons why this target group should be seriously considered by those offering STEM subjects and included in the message that engineering is for all. A graduate with a disability might present differently, but they are naturally a group of creative thinkers, team players, flexible and adaptable – they have to be! Most importantly they are used to thinking outside the box. So what is the issue? Are these not the very attributes that employers seek out and recruit? Perhaps.

But perhaps the more difficult question is that if STEM industries and particularly engineering need more diversity – how do we acheive it in a meaningful way?

One small step would be to offer a placement opportunity (specifically) to students with a disability. This one action may sound simple but having worked for over 10 years with employers we know this not to be the case. We also know that it contributes greatly to changing cultures, practices and challenging unconscious bias. It creates positive learning opportunities for a team, a division and a company.

Placement is often an optional addition to a course, or it can be a mandatory component, and may even take place after graduation. It is often credited (that is, part of the degree) but whether or not it is, the experience is invaluable. Industrial placement recruitment is competitive and involves company visits and interviews and while there is support from the faculty, careers and placement services in preparing CVs and refining interview techniques, and projects such as WAM for employers, where a student with a disability is competing with their peers the view may be that they are somehow not 'the right fit', or there is someone 'better on the day'. While this

may not necessarily be the case, it is unfortunately all too often a response which has not been fully thought through.

It might be helpful if we reviewed the benefits of placement for all those involved who face the challenge of making a case to prospective placement providers. Indeed these benefits are the same for all students but have particular currency for disabled students who may face additional barriers regarding perception of their abilities.

- It is an opportunity for practical experience in an industry - they can never be really clued up on what a job entails until they have been working practically in that role. Equally an employer can never really know how someone will perform until they engage in the work.

- It is real world exposure to the latest technology.

- It is an opportunity to engage in work behaviour.

- It is also an opportunity to learn the 'language' of industry.

- There are improved job opportunities due to the fact that an employer likes to see work placements on a CV. More importantly perhaps, there is an opportunity for mutual learning, that is, learning for the student, the HR team, the hiring manager and colleagues.

- The experience of teamwork and development of interpersonal skills – for all employees the ability to work in a team and with colleagues that might bring new ideas and new skills to a work environment can positively challenge the way they think.

- There is an opportunity to also develop a greater awareness of current developments, while at the same time facilitating an 'intro' for students with a disability who are hoping to work in thier chosen career; gently challenging any unconscious bias in a real way.

- It is thought that students who complete a placement go on to achieve higher grades and better degrees - the additional skills and knowledge gained during a work placement can often be directly applied to studies and, applied correctly, can lead to better grades. Where a student with a disability misses an opportunity for learning it can impact on their grades.

- There may be a chance of a firm offer of employment on graduation - performing well on a work placement can often lead to job offers. The significance of this for a group of students that face greater challenges in seeking employment is not to be underestimated.

- The most significant benefits are often in areas of personal development, confidence, maturity and self-awareness.

This article is proposing that placement, while part of the journey, can also be part of the answer as STEM employers and particularly those in engineering seek to engage a greater diversity of future employees. We have learned from over 10 years of WAM that there is a strong argument for positive discrimination in placements by setting aside opportunities for a student with a disability, be they deaf, hard of hearing, dyslexic, visually impaired or with other impairments. This has to start when a student is studying, it is the only real way that companies and organisations can make positive changes. While it is important for an employer, there are many benefits for the student with a disability.

In conclusion, employers are key influencers when seeking to make engineering and STEM careers more diverse. Engaging with a student on placement should not be overlooked as an opportunity, as it is the first opportunity to create real links and relationships. Placement is about real engagement; it's about practical engagement and it's about learning; not just about how a student with a disability best does something but also how they engage, how they share their story and make their own way. It's about considering, often for the first time, what might be needed if not just a student with a disability, but if a company is to realise their potential – it's about engineering in its truest sense.

Placement is most of all about opportunity. Every one of us can relate to 'opportunity', after all, if you never get an opportunity, you'll never know what you are great at.

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In education, AHEAD works with graduates and employers through the GET AHEAD Graduate Forum and the WAM Mentored Work Placement Programme.

Can I Bring my Robot to Work?

Lorraine Gallagher

Lorraine Gallagher has a Masters in Fine Art. She has worked in the area of disability equality for many years and is currently the Information & Training Officer for AHEAD. Prior to working for AHEAD Lorraine worked as research assistant and co-facilitator to Peter Kearns at The Workhouse. She also worked as the disability equality trainer on Music Map, a music management course run by the City Arts Centre. .

The benefits of assistive technology for people with disabilities are well known. The fact that they can be low cost and available at all hours can make a real difference to people's lives, ranging from enabling them to live independently to 'leveling the playing field' in education and the world of work.

The **WAM Programme** at AHEAD ran a free training event hosted by WAM Employers Dell and ESB as part of Engineers Week in March. Using the format of a debate we examined the concerns that can arise as to how this new technology fits into our lives, with particular emphasis on the learning and working environment. A pertinent topic in light of the new **National Skills Strategy 2025**, which outlines the future skills necessary to keep our economy growing and the increasing demand for graduates with backgrounds in areas such as manufacturing, construction, hospitality and STEM. Indeed the demand is now so great that companies like Dell are often engaged in 'talent wars' because there simply aren't enough suitably qualified individuals to meet demand. With this in mind, it's really important that graduates with disabilities are empowered to have the same opportunities as their non-disabled peers in this growing, competitive market.

The motion for discussion was titled - Should employees have unlimited access to assistive technology in the workplace? Both sides made some really good points. The 'yes' side took a pragmatic, impassioned approach citing some very interesting statistics from research carried out by **Gartner Inc** in 2013. According to Gartner, 15 percent of the world's population have a disability, representing 8 trillion dollars in spending

power. The other 85 percent are referred to not as non-disabled but rather 'situationally or occasionally disabled'. For example, road traffic laws have made it illegal to physically use a mobile phone while driving, making the driver 'situationally' disabled from using their phone. However, through the development of voice recognition and Bluetooth it is possible to make a call hands free. Another interesting statistic is that 85% of disabilities are acquired during our working lives, and coupled with the fact that the world has an aging population, our dependence on assistive technology is set to increase in the coming years. But of course technology is not just about disability, it benefits everybody. With the majority of us using technology and multiple devices on a daily basis, we should be allowed unlimited access.

Employers should be supporting talented employees regardless of disability.

It's important to state from the outset that the 'no' side were not anti-assistive technology but rather took issue with the notion of 'unlimited access'. As outlined by one of the 'no' side debaters, many people working in the company he works for bring their own device to work, but they have to be mindful of the security of the network as any breach of this could cost the company millions. This means that access has to be limited to what the company can realistically facilitate, and while the developments in technology might be increasing exponentially, the ability to work across or within multiple platforms is not there yet, so it's about collaboration - understanding user needs and coming up with a solution that works for everyone.

Another very interesting point raised by the 'no' side was that, if it were left up to individuals to bring in their own AT, the responsibility for its cost and maintenance would rest with the individual rather than their employer. It might, for example, be an older version than is currently available, it might not be compatible or it might not be the best fit. The onus shouldn't be on the employee to bring their own device.

Closing remarks from both sides acknowledged the benefits of technology and that there needs to be more work on making assistive technology compatible so that you can 'plug and play' across different platforms. Perhaps we shouldn't be asking whether I can bring my robot to work but rather, do you have a robot I can use in work?

AHEAD would like to thank Dell for hosting the event and everyone who took part in the debate. If you would like more information about upcoming AHEAD events join our mailing list, see our website for information or email **ahead@ahead.ie**

Connected Voices in Learning Exhibition

This exhibition aims to celebrate the huge diversity of people in our higher education system through the lens of Universal Design for Learning (UDL) by examining the multitude of connections that exist between our leaders, our champions for change (student support staff) and most importantly, our learners.

Our leaders in higher education have shone light on the inspirational words that have motivated their thinking with regard to the potential of higher education in Ireland.

Our champions for change have given us a window into their professional and personal lives through their intimate portraits, which share their proudest moments and personal passions.

Here is Broze O'Donovan's own reflection:

Broze O'Donovan

Our learners have revealed the richness of their personal learning stories by contributing personally designed stamps and participating in the creation of an inspiring group poem.

Behind every student lies a personal story; a journey through an educational landscape that for some appear familiar and for others strange, even foreign. This exhibition is both personal and public; unique but representative - of how our learners see their place in this interconnected web of experiences. Their individual voices tell of life stories shaped by circumstance, happenstance and opportunity.

Their words, images and designs expose their hearts and minds, a rich palette of artefacts symbolising the humanity of diversity - each unique but connected representing individual threads in a complex colourful pattern.

A postage stamp was once a key medium to connect individuals and their stories. It carried the power to transport your personal thoughts and feelings around the globe. The postal service was entrusted with this responsibility, a purveyor of your private communications who guided each unique letter through the great interconnected public communication network. In a sense it reminds us of our role - interconnected with each other to provide the guidance, support, direction and love to ensure that each learner arrives at their chosen destination.

Our artists and poets in 1916 were moved to act for the benefit of others; motivated by a vision for change that would cherish all our children equally. Words and images were a key weapon in changing hearts and minds.

CONNECTED VOICES IN LEARNING

Here we come

Here we come, from all directions
like leaves on the wind in autumn
lone motes in the ebb and flow
of morning traffic.
Hopping off buses, jumping
out of our parents' cars,
waving goodbye or just walking.
Some talking to others, most not,
this is the first day after all -
we don't know anybody
and we're trying to play it cool.
looking around at where we are
or staring down, at a map,
a timetable, a mobile phone.
Drawn towards the same place
with that name we've been savouring,
repeating to our parents,
our friends, to anyone who'll listen.
This morning, we're going to college.

College -
stepping into our tomorrow.
Weighed down with back packs,
folders, tablets, laptops,
pens, coffees, bottled water,
for some that's plenty, maybe
too much.
For others - that's nothing, because
we're carrying something else -
anxiety, or something bigger, maybe;
the hangover of a one night stand
gone wrong,
an argument with a cheating lover,
a recent death in the family,
a problem with drink, or drugs, or both.
Or maybe we've once been told
that we're simply the wrong sex,
the wrong religion, too old,
the wrong colour, not fit enough,
disabledin some way that didn't make
the grade before.
Maybe school just never felt right,
maybe this is our second try,
maybe that's keeping us back all
the time
holding us down, like chains or
anchors.
Maybe we're here, but ready to bolt
ready to throw it all away,
but we won't, not yet.

In our hearts
we've stowed away hope
humanity's oldest motivation
and like flames inside our ribcages
we hold our dreams,
some almost extinguished
some undiscovered like distant stars
and all we ask from you is that
you see this
and give us a few things.
Consistency,
an environment that cares for
our minds, our bodies, our souls
somewhere to make friends.
A system of mentors we can trust
to turn up in both senses of the word.
To look for what we can't see in
ourselves.
Experts who are out there,
still learning themselves.
Eccentric, stern, passionate,
always inspiring us to work
harder than we want to
harder than we think we can.
And if you want to know
how hard it is for us, just ask.
The best of you always do.

Give us these things
and we all become part of the plan.
A connected part of the whole.
Like the intricate parts of a watch
but less separate.
So much more than just one cog,
more like the people who invented
the watch itself,
or tracked the sun through the sky,
plotted the cosmos or mapped
the soft machinery of the human heart.
Here we come, from all directions
like leaves on the wind in autumn
students who want to stand
as graduates not just of a college
but of a way of life, a way of thinking,
a way of believing that anyone can be
the person they dream of being.

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Association for Higher Education Access & Disability

itb

Here we come

Here we come, from all directions
like leaves on the wind in autumn
lone motes in the ebb and flow
of morning traffic.
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out of our parents' cars,
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Some talking to others, most not,
this is the first day after all -
we don't know anybody
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as graduates not just of a college
but of a way of life, a way of thinking,
a way of believing that anyone can be
the person they dream of being.

Above all, this exhibition is about the unique qualities of people's journeys – the inspirations, the barriers, the personalities - which help to shape our higher education ecosystem.

The exhibition Connected Voices in Learning was organised and curated by AHEAD and the Institute of Technology Blanchardstown and was shown at the AHEAD Symposium 2016 - Taking Stock: UDL. If anyone is interested in hosting the exhibition in their institution please email **ahead@ahead.ie**

An Overview of a Strengths-based Approach to Employment for Individuals with Disabilities

Amanda Saxe

Amanda is a PhD Candidate in the Department of Educational and Counselling Psychology at McGill University in Montreal, Canada. She is a member of the Social Policy, Advocacy, Research and Community (SPARC) research lab which develops action-research projects focused on improving the quality of life and self-determination of at-risk youth and individuals with developmental disabilities. Amanda's dissertation research concerns employment barriers and employment needs of individuals with disabilities, and hopes her research will contribute to the creation of work environments that are inclusive and accessible to all.

Employment is a fundamental aspect of adulthood that permits individuals to be autonomous and financially independent. Having a job allows us to create social contacts, to feel part of something that is greater than ourselves, and to have a sense of purpose (Evans & Repper, 2000). It is therefore a critical aspect of social inclusion (Evans & Repper, 2000). For people with disabilities, however, the prospect of finding or keeping a job may be particularly difficult. Since having a disability already results in experiences of social exclusion, lack of employment only exacerbates this problem.

Individuals with disabilities who are employed full time report higher levels of life satisfaction than those who do not have full time jobs (Moore, Konrad, Yang, Ng, & Doherty, 2011). However, achieving steady employment continues to be a struggle for these individuals. In Canada, this critical problem was made very evident by the 2012 Canadian Survey on Disability (CSD). Approximately 13.7% of Canadians over the age of 15 reported in this survey that they had a disability, whether learning, developmental, physical or psychological (Bizier, Marshall, & Fawcett, 2014) and it was revealed that people with disabilities were twice more likely to be unemployed when compared to those without disabilities (Turcotte, 2014).

Furthermore, individuals with disabilities who were employed earned significantly

less than workers without disabilities (Turcotte, 2014). This result was consistent irregardless of educational attainment: even individuals with disabilities with university degrees earned significantly less than individuals without disabilities with the same level of education (Turcotte, 2014).

People with disabilities report numerous barriers that impede their employment

Barriers include being dismissed from a job due to one's disability, employer discrimination, and negative labelling (Shier, Graham, & Jones, 2009). Other barriers identified by young adults with disabilities include lack of adequate job training, loss of financial supports once employed, and lack of accessible transportation to one's workplace (Lindsay, 2011). It is necessary to begin breaking down these barriers so that all individuals, whether experiencing a disability or not, has an equal chance of getting a job.

My approach as a course lecturer

As a course lecturer for pre-service teachers, I have had the opportunity to teach theories and strategies that aim to promote the successful inclusion of individuals with (and without) disabilities. One of the first discussions we have in these courses concerns the implications of medical and social models of disability. While the medical model suggests that disability is due to a deficit within the individual, the social model argues that disability is a function of societal barriers (Hughes, 2010). A person who uses a wheelchair is only 'disabled' when they encounter a non-accessible building, or a sidewalk without a sloping curve. This model emphasizes that it is the responsibility of society to ensure that buildings, schools, workplaces and other environments do not impede on any individual's ability to function, whether or not they have an impairment (Hughes, 2010). Disability is viewed as a difference, not as a deficit.

Despite advances made by the gradual acceptance of the social model of disability in educational fields, I feel that disability research, and discussions of disability in general, almost always contain a negative underlying tone. In research there has been a focus on developing strategies and resources that prevent disability from inhibiting a person's success, discussions of ways of how one can overcome and live fully despite their particular difficulties, and, in the case of employment, a focus on how a disability does not mean an individual is not employable. Disability is still viewed in a less than positive light, which is made all the more evident by the fact that all disabilities are consistently defined and diagnosed based on their undesired symptoms.

What is lacking in disability discourse is the idea that 'the negative' does not have to be the determining factor of disability. A disability, while disruptive, sometimes excruciatingly painful, and certainly life-altering, can also foster strengths that may not have otherwise emerged within an individual. Focusing on the symptoms does provide a guide for supports and resources that someone with a disability may need, which is essential for the maintenance of quality of life. However, this focus does not provide the full picture of an individual's potential (Buntix, 2013).

I have had various experiences that have contributed to my understanding of disability. I have interned as a learning strategist for university students with learning difficulties, worked as a program facilitator for young adults with developmental disabilities, and volunteered as a community integration aide with seniors with mental illness. Throughout all of these experiences, my understanding and appreciation for disability has grown. While everyone I worked with endured various setbacks due to their differences, it was clear that each had abundant qualities to share with their communities. These qualities were not developed in spite of disability, they were developed in tandem with disability. These qualities were just as significant to their personhood as those qualities that deemed them 'disabled'.

Identifying and promoting the benefits

Research offers clear evidence for the benefits of hiring employees with disabilities. A large study conducted by De Paul University found that individuals with disabilities had less scheduled absences and equivalent performance ratings than employees without disabilities (De Paul University, 2007). In addition, company administrators reported that employees with disabilities are very reliable and that the cost of any accommodations needed were negligible (De Paul University, 2007). Moreover, individuals with autism and intellectual disabilities are shown to demonstrate lower turnover rates and better work safety behaviours than individuals without disabilities (Ready Willing & Able, n.d.). While more research is necessary to expand on these findings, there is certainly evidence that individuals with disabilities are unmistakably very valuable members of the workforce.

The strengths-based approach to disability

The adoption of a strengths-based approach to disability (Wehmeyer, 2015) that focuses on the skills and abilities that people with disabilities have to offer would foster much more access to employment. This approach emphasizes the skills that individuals with disabilities contribute to work environments and the rest of their communities. Rather than developing hiring initiatives in order for companies and employers to appear sympathetic towards employees with disabilities, there should be a understanding of how the strengths of individuals with varying disabilities would benefit their employers. Of equal importance, this strengths-based approach would facilitate the development of self-esteem and self-determination among people with disabilities (Wehmeyer, 2015). It is necessary to add that a strengths-based perspective of employment of individuals with disabilities does not negate the fact that accommodations might be necessary in order to reduce workplace barriers (Buntix, 2013). However, the focus

when hiring any individual, whether diagnosed with a disability or not, should always be what talents they can offer.

It is my belief that perspectives of disability will continue to evolve. The movement towards a more positive and strengths-based approach to the concept of disability will enable further access to social inclusion, including access to employment. Progress has been made, but improvements are needed so that all individuals have access to jobs in which they can be autonomous, financially independent, and included.

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The Career Pathways Transition to Employment Project: Development, Outcomes and Future Directions

Kieran Lewis

Kieran is a Senior Occupational Therapist within the Disability Service in Trinity College Dublin and for the last two years has been a project officer within the Genio Funded project, Career Pathways. Kieran is also the lead on phase three activities within the Disability Service strategic plan, which focus upon the student's transition to employment. Kieran holds a Bachelor of Science in Occupational Therapy and is currently undertaking PhD Research into the development and efficacy of an occupation-focused self-management programme.

Claire Gleeson

Claire is a Senior Occupational Therapist within the Disability Service in Trinity College Dublin and also leads on the Disability Service Student Ambassador Programme, which aims to enhance the student experience and to develop an infrastructure to build a student led initiative and support and provide opportunities for experiential learning. Claire holds a Masters of Science by Research, a Bachelor of Science Honours Degree in Occupational Therapy from Trinity College Dublin and also a Post Graduate Advanced Certificate in Education specialising in Autistic Spectrum Disorder from Queen's University Belfast. Claire is currently undertaking a PhD which aims to explore the lived experiences of women with Autism Spectrum Disorder in their transition out of college.

Eileen Daly

Eileen is a Careers Adviser within the Careers Advisory Service in Trinity College Dublin, and is responsible for supporting undergraduate and postgraduate Students with disabilities. Eileen has a Bachelor Social Science degree from University College Dublin and an MA in Education in Guidance and Counselling, from Trinity College Dublin. She also has a Higher Diploma in Adult & Community Education from NUI Maynooth, and Level A psychometric testing certification. Additionally she holds qualifications in Life and Career Coaching from Positive Success Group, Dublin. She previously worked in a number of roles in the education and disability sectors within The National Learning Network and the City of Dublin Education and Training Board prior to joining Trinity College's Careers Advisory Service.

This article describes a recent project undertaken to support students with disabilities in their transition from higher education into employment.

Introduction

Over the past ten years, more and more students with disabilities are accessing and succeeding in higher education (AHEAD, 2015), in part through the development of various pathways to education and the provision of a variety of supports within the educational context.

However, embarking on the transition from higher education into employment can be fraught with challenges for these students (Fichten et al, 2012). The employment levels of individuals with disabilities have remained significantly lower than their non-disabled peers (ESRI, 2010). In 2010, the employment rate for individuals with disabilities was low at twenty eight percent (Watson, Kingston & McGinnity, 2012). The National Disability Authority (2014) maintains that disabled people are two and a half times less likely to be in work than non-disabled people. As a result of the challenges experienced by people with disabilities, it is timely that the Irish Government published the 'Comprehensive Employment Strategy for People with Disabilities 2015-2024' in October 2015. This sets out a ten-year approach to ensuring that people with disabilities, who could and want to work, are supported and enabled to do so. One of the actions from phase one of the strategy emphasises the need to support students/graduates with disabilities in higher education to develop work related skills and experiences to support them in their transition from college to employment.

In order to go beyond the policy and listen to the student's voice, research was conducted by the Discipline of Occupational Therapy in Trinity College Dublin, with students and graduates with disabilities (Nolan and Gleeson, In press). This explored their experiences, perspectives and concerns in relation to their transition from college to employment.

Findings from this research, highlighted specific perspectives relating to the need to gather and build work-related experiences and personal strategies while in college. Furthermore, managing and negotiating disclosure and reasonable accommodations in the workplace was a palpable concern for the students and graduates. These perspectives identified particular needs amongst students with disabilities and hence the establishment of the Career Pathways Project. This article will outline the development of the Career Pathways approach, the outcomes of the project thus far, and the future directions for supporting students in the transition to employment within Trinity.

Development of the Career Pathways approach

Career Pathways was established to be a flexible and individually-tailored transition service for students with disabilities, which they could access throughout their time in college and into employment. The project was a collaboration between the Careers Advisory Service and Disability Service in Trinity College Dublin. The aim was to develop a streamlined process to support students with disabilities in the transition to the workplace.

An application was made to the **Genio Trust** for funding, based upon the project objectives outlined below:

1. To develop a clearly delineated individual process comprising three stages, with access to individually tailored resources. **https://www.tcd.ie/disability/career/Pathways/3stages.php**.

2. To develop an e-portfolio system where students can track and log their work-related experiences and engagement with resources available.

3. To develop a series of peer workshops, involving graduates with disabilities to act as mentors to current students.

4. To connect students to employers through employment events.

5. To provide workshops to Careers and Disability Service staff with the Higher Education Institutes involved in the project.

A Careers Adviser was recruited, with experience within the higher education and further education sector, but also with specific expertise and knowledge of the disability area, to act as Careers lead on the project. A key role was identified for occupational therapy in enabling students' engagement in work-related occupations, drawing upon the experience of the **Unilink Service**, and two senior Occupational Therapists were seconded to the project.

Occupational Therapy has a long history supporting individuals to engage in work, across many settings and contexts. The philosophy of the approach was based upon recovery principles (Deegan, 1998; Anthony, 1993), as recommended in A Vision for Change, the Report of the Expert Group on Mental Health Policy (2006). This placed focus upon empowering the student to develop personal self-management skills and strategies to manage his/ her role as a worker. Additionally, it focuses upon instilling hope and enabling the student to advocate for themselves, and promotes social inclusion by increasing diversity within various work environments.

Outline of the Career Pathways approach

The Career Pathways Process

The process involves three stages; exploring your career, building your career, and launching your career. The process within the approach is flexible and students can access at any point in their student journey. When a student initially comes to Career Pathways, he/she identifies areas of concern and difficulty through a self-report profile; entitled the Career Pathways Profile, which is based upon the Person Environment Occupation Model (Law,

Cooper, Strong, Stewart, Rigby & Letts, 1996) and goals are set collaboratively with the student to work upon. Depending on the goals of the students, they can choose to access individual meetings with Disability and Careers Service staff; monthly workshops jointly led by staff and graduates with disabilities; employer events; annual boot camps or online resources via a specially designed e-portfolio system, using the **Pebblepad system**. The student has access to these resources to focus upon areas such as CV development, interview preparation, refining reasonable accommodations for the workplace, disclosure, and managing health and well-being in the workplace. As students engage, they are asked for feedback via questionnaires and verbal feedback, in order to ensure and explore if the needs of the students are being addressed and also to make adjustments to ensure quality of project and service delivery.

Outcomes of the project

Project Statistics:

- 134 students or graduates with disabilities have availed of Career Pathways over the past two years.
- Over 500 individual meetings have taken place between students and Occupational Therapists / Careers Advisers.
- 74 students have been set up on the ePortfolio system, developed within the project to allow students to log their work related experiences and engagement with resources available.
- 45 students have attended monthly workshops and a three day Career Pathways Boot Camp delivered, by the OTs, Careers Advisers, peers, and employers.

- 26 Disability and Careers Service staff from four HEIs within the Dublin area have attended training workshops on supporting students with disabilities transition to employment.

- 16 Employers have connected with Career Pathways, with three large multi-national employers hosting events in their Head Offices.

Student Feedback

I found the mock interviews extremely helpful. The fact the service is available to graduates for one year after graduation is really brilliant. The service has given me so much help, support and encouragement – I have really grown in confidence through it.

Through a series of workshops and one-to-one sessions, I've been able to work on my CV and interview presentation, giving me the confidence that I need to excel in the professional world.

.... communicating with peers who are in similar situations, a sense of acceptance and openness surrounding the boot camp.

A thank you to you all for the very useful, helpful and informative Bootcamp. The workshops were well run and organised. Speakers from outside was also a great idea. The space for working was great to have. I appreciate the opportunity to connect and talk with other students in a relaxed, easy atmosphere e.g. over lunch.

Future directions

Career Pathways has been successful in supporting students and graduates in their transition from college into employment. An exciting aspect of the project moving forward, is the development of the Disability Service Student Ambassador Programme. This programme moves beyond the delivery of services to students, to collaboratively work with students to strengthen, develop and deliver services to students availing of the Disability and Careers Services. The Ambassador Programme seeks to offer students opportunities to develop work related skills through monthly training and leadership workshops and to execute these at Disability Service events. The Career Pathways project has realigned the focus upon service provision within Trinity to not only support the academic development of students, but also the personal and professional development, enriching and enhancing their prospects for the future.

This project wouldn't have been possible without the vision, commitment and drive of the Disability Service Director, Declan Treanor, the Director of the Careers Advisory Service, Mr Sean Gannon and The Unilink Service Director, Dr Clodagh Nolan. We would also like to thank the Genio Trust for funding the project.

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National Plan for Equity of Access to Higher Education 2015-2019

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Introduction

The third National Plan for Equity of Access to Higher Education 2015-2019 was launched by the Minister for Education and Skills on 16 December 2015. This new, five-year plan has been developed by the Higher Education Authority (HEA) in conjunction with the Department of Education and Skills (DES). The plan forms part of an overarching policy for social inclusion in education and will be implemented as part of Ireland's National Strategy for Higher Education to 2030 (DES, 2011).

Context

Equity of access to higher education has been a fundamental principle of Irish public policy for the last forty years and the economic and social rationale for the continuing prioritisation of this area of work remains strong. A highly educated workforce is one of Ireland's greatest assets. To attract and retain the high-end jobs that a modern knowledge-based economy generates, there is a need to tap into the skills and talents of all of our people, not just those groups who have traditionally progressed to higher education.

The individual benefits of gaining a higher education qualification are well rehearsed and include better employability and higher earning power. There are also many non-financial benefits: graduates tend to enjoy greater job satisfaction, participate to a greater extent in society, and have better health. They are also likely to pass down an appreciation for education and its benefits to the next generation and to their local communities.

There is also a moral imperative in continuing to prioritise access which is best illustrated by the data presented in the plan on participation by socio-economic group and also by Dublin postal code. This data shows how 100% of school-leavers from some communities progress to higher education, compared to 25% or

less of those from other groups and areas. In consultation for the new plan, strong representations were made on behalf of low-participating communities who face barriers in accessing higher education.

The aim of the new plan is to support better choices and opportunities for many more learners from these communities over the coming years.

Progress to-date

Ireland has made significant progress in increasing equity of access to higher education over the last 20 years. There has been a notable increase in participation by students with disabilities and also those studying on a part-time or flexible basis. However, there are still groups who remain under-represented in the sector, particularly mature students, those with sensory and physical disabilities, young people from socially disadvantaged communities and Irish Travellers. This is the first plan in which participation in higher education by the Traveller community has been addressed as a specific policy priority. Similarly, targets have been set for the first time to increase participation in higher education by graduates with further education qualifications. Collaboration between Quality and Qualifications Ireland (QQI), The Further Education and Training Authority (SOLAS) and the HEA, and work by regional clusters on the development of pathways will support the achievement of this target. The plan sets out the objectives, actions and indicators designed to address under-representation and deliver the national participation targets for 2019.

Ireland is one of a few countries that uses targeted measures to increase participation by under-represented groups**.** These targets have been at the core of National Access Plans and have underpinned the rationale for the continued investment of resources in this area. Programmatic and core funding - allocated since 1995 by the HEA - has supported higher education

institutions in developing pre-entry outreach programmes with schools and communities, as well as post-entry services and supports, including disability support services. The outcome of this investment is the progress that has been achieved over the past two decades.

For example, the overall rate of participation in higher education among 18 to 20 year olds has grown from less than 40% to over 52% of this age cohort. In addition participation by mature learners has grown from 4% to 13% of entrants to the sector. There have been significant strides made also in participation by people with disabilities which have risen from 1% to 6% of students. Participation in part-time and flexible programmes of higher education has also seen significant growth over the last decade, from 7% to 19% of all students. The National Access Plan has set new targets for further increases in participation by 2019.

Next steps

A framework of challenging but realistic objectives and actions are set out by the plan as the focus for work on access over the next five years. In particular, there is a renewed emphasis on the need for stronger systems of collaboration and partnership among a range of stakeholders if real progress is to be achieved over the period of this plan. The actions planned include support for new pilot regional and community partnership strategies targeting low participating groups and communities.

Overarching reforms and landscape changes to the higher education system being progressed as part of a National Strategy for Higher Education to 2030 are also relevant in this regard. Equity of access is a core objective in this strategy and the mapping and development of more flexible pathways to higher education is one of the priorities identified for the period 2014-2016. Progress on this priority by institutions has been reviewed by the HEA as part of a process of strategic dialogue and performance development. The

second HEA report on the overall performance of higher education sector on a number of national priorities, including equity of access, will be published early in 2016.

In consultation for the new plan the HEA and the DES noted the critical role that mentors and teachers play in nurturing the educational aspirations of primary and second level students. Another area of action therefore will be to advance a national, collaborative approach to mentoring and other outreach initiatives with second level schools. Increased access to teacher training as a profession, as well as the professional development of teachers will also be prioritised.

Measures focused on supporting the retention and participation of students from target groups are also the focus of the plan which calls for more strategic approaches on the part of higher education institutions in supporting equality of outcome among a more diverse student body. While the pioneering work by access offices will continue to lead innovation, consultation for the development of this plan indicates that the best interests of students are met where whole-of-institution approaches are being advanced.

Among the actions advocated by the plan is that:

- each higher education institution have an overall institutional access strategy that is aligned with the policy and targets set out by the National Access Plan.

- each faculty designate an 'equity of access champion' to advise and support implementation of the institutional access strategy.

- embedding more mainstream, Universal Design approaches is also relevant to supporting the needs of students with disabilities as well as students more generally.

Models of best practice are being developed by AHEAD and higher education institutions and the dissemination of these, as well as continued innovation will continue to be promoted and supported by the HEA over the coming years.

Conclusion

The National Access Plan 2015-2019 represents a renewed, national commitment to the achievement of a more inclusive higher education sector as a core element of wider national recovery, renewal and growth. For each year of the plan there will be an annual forum to report on progress and a mid-term review of the National Access Plan will take place in 2017.

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Universal Design for Curriculum Design

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The promotion of Universal Design in education, and Universal Design for Learning (UDL) in particular, has become ever more prevalent over the last number of years. With the previous AHEAD conferences and seminars and the recent National Disability Authority (NDA) conference we can see that staff and policy makers working within higher and further education in Ireland are increasingly investing time and thought into this framework. However, much more work is needed to ensure that the principles of Universal Design are implemented in classrooms and lecture theatres. Now that we are seeing and understanding of the benefits of Universal Design in education it is time to start focusing on the practical applications. In this paper I look at the principles of Universal Design for Instruction (UDI) rather than Universal Design for Learning (UDL) as I feel UDL lends itself to a more immediate understanding and application in the higher and further education setting. However, it should be pointed out that both UDL and UDI have the same basis and promote the same fundamental principles. The principles and applications outlined in this paper have been developed for delivery to academic staff in University College Dublin (UCD) as part of the UCD Teaching & Learning professional qualification in university teaching. This session is delivered as part of the module entitled 'Designing Modules for Engaging and Effective Learning'.

Firstly, it is important to point out that the implementation of Universal Design ideally should be carried out at module design or re-design stage. McGuire & Scott (2006) note that,

> while faculty are legally required to provide reasonable accommodations for students with learning disabilities who request them and provide documentation to verify the need for such, too often the process becomes one of retrofitting changes and accommodations to a course (p. 22).

Retrofitting or adjusting anything while it is already in use is certainly much more challenging and often far less effective than building in at design stage. Implementing Universal Design strategies in a totally new module therefore is ideal. However, when reviewing existing modules and considering student performance and feedback on the module, Universal Design strategies can be considered to address any difficulties or to increase student engagement and inclusion.

Universal Design for Instruction

The nine principles of Universal Design for Instruction

The nine principles of Universal Design for Instruction (UDI) presented here were developed based on empirical evidence gathered by McGuire and Scott using focus groups of third level students with learning disabilities (LD) (McGuire & Scott, 2006). It should be noted that LD as defined in the US where McGuire and Scott carried out their work, is not a single condition or disorder but includes a range of disabilities that exhibit difficulties in the areas of reading, language and mathematics.

Principle 1: Equitable Use

All students should be able to participate fully in their classes and be given the opportunity to meet learning outcomes, preferably with the same opportunities for engagement offered to all students. Implementation of this principle includes the provision of accessible class materials. Application of Universal Design should mean that all students are able to access the same set of notes or materials without the need for any student to be provided with an alternate format or additional explanative materials. Class materials can include slides, documents, audio/visual material and textbooks – using a variety of teaching materials allows as many students as possible to engage with the content based on varying learning styles and preferences. A contentious issue here is the provision of slides or notes to students using the online learning environment as staff are often concerned about a drop in attendance if this material is provided. However, research shows that provision of materials, even recordings, does not impact negatively on attendance (Larkin 2010).

Principle 2: Flexibility in Use

This principle emphasises the need for the use of variety and flexibility in approach. Inclusive teaching obviously includes a diversity of instructional methodologies. Rather than a reliance on the traditional lecture model teaching staff should provide a variety of methods of instruction such as discussion, group work, interactive exercises, use of online resources and/or use of audio/visual material. Teaching approaches must take into consideration varying learning styles as reliance on any one teaching style will inevitably result in the disadvantage or even exclusion of some learners. Research has shown that instruction which allows students to learn in a way that suits their individual learning style improves student performance outcomes (Higbee, Ginter, & Taylor, 1991; Lemire, 1998).

Choice of assessment can form a vital part of an inclusive and flexible teaching approach. Thompson et al. (2002) note that 'universally designed assessments are designed and developed from the beginning to allow participation of the widest possible range of students, and to result in valid inferences about performance for all students who participate in the assessment' (p. 6). Geraldine O'Neill (2011) completed a project on choice of assessment in UCD and as a result has developed a very useful tool for ensuring that various assessment methods used are equitable.

Principle 3: Simple and Intuitive

This principle outlines the need for transparency and ease of use with regard to module content and assessment. Students should be able to ascertain all necessary details regarding topics to be covered, full reading lists, and assessment methods before choosing or beginning a module. Students should be provided with a clear marking rubric to ensure that they know how each of their assessments will be graded. Students should also be given detailed instructions for assessments, including, where possible, sample answers (not based on the specific topics covered) to ensure that they know exactly what is expected of them. There should also be consistency across modules with regard to the amount and level of difficulty associated with assessments.

Eliminating unnecessary complexity in the material being presented to students is also vital. Research has shown that poorly designed textbooks, for example, that do not incorporate Universal Design principles can be difficult for students to access (Jitendra, Deatline-Buchman, & Sczesniak, 2005; van Garderen, 2006). Teaching staff should closely review the reading materials given to students in order to circumvent any potential problems students may have in accessing/understanding the material being presented, with a consideration of the principles of Plain English.

Principle 4: Perceptible Information

This principle further highlights the need for all material to be provided in an accessible format for all students. Creating alternative format materials is often a costly and problematic practice which can result in loss of equality for students and a significant investment of time during busy term time from faculty and support staff. Providing online or digital versions of texts removes a number of barriers for students, including cost and often physical accessibility. The provision of digital material allows students to access it in a variety of ways including on screen, using a screen reader, or in a printed, physical format and helps to alleviate the financial burden of purchasing expensive texts.

Reading lists should be reviewed regularly with a view to providing as much of the material as possible in an accessible digital format. This may involve liaising with library staff and publishers. Compliance with Web Content Accessibility Guidelines 2.0 and guidelines for producing accessible material should also be ensured. Institutions should also ensure accessibility is a condition of procurement at all levels. It is the responsibility of those buying/sourcing software packages or interfaces to ensure they are accessible to all users. It should not be assumed that all modern packages are accessible; for example, applications which use Flash or present material in such a way that the text cannot be read by screen reading software can be highly problematic.

Principle 5: Tolerance for Error

This principle points to the problematic assumption that all higher and further education students come to a module with a certain set of 'core skills'. Students often come to modules without some of the experience or skills assumed by their lecturer/tutor. This can be challenging as students can feel uncomfortable asking for help or clarification. It is vital that faculty keep in mind the diverse

range of students in their class groups. Students with non-visible disabilities or those with varying educational backgrounds are not always easily identifiable. Embedding core skills into all modules is a simple and effective way to ensure that all students have equal opportunity to succeed. It is highly beneficial if some time is spent in each module ensuring that students have the skills required to complete the module. These skills may include academic writing, oral presentations, reading techniques or research abilities. Setting aside at least one hour in each module to review these skills, as well as providing resources through the online learning environment can help to ensure that no student is left at a disadvantage.

This principle also emphasises the importance of allowing students to track their progress throughout a module. Helping students to be aware of their own development can help them to focus on areas that need improvement. Often six or more weeks of a 12 week module will have passed before a student receives any indication of how they are progressing. This leaves little time for students to reassess and rectify their work from the first half of the semester. Faculty may wish to consider providing self-assessments through the online learning environment. Short self-administered quizzes can assist students to monitor their progress and can help students to become more self-aware in terms of their own knowledge and learning practices. In some modules it may also be appropriate and possible to provide a facility for submitting drafts of continuous assessments. Allowing students to submit drafts of their work helps them to understand that producing a complete piece of work is a process of drafting and re-drafting. This would, of course, require extra time of tutors and lecturers. However, the result of this practice would be much improved student work which must ultimately be the goal of education.

Principle 6: Low Physical Effort

This principle highlights the need to remove any unnecessary physical exertion. This includes excessive amounts of writing in class. In order to allow students to engage with the material being presented, they should be allowed to record lectures for study purposes. This recording, together will the class materials available online, could allow students to be more comfortable in class as it removes the stress of 'missing' information. Providing audio recordings/podcasts of lectures can also be extremely beneficial. Although this issue can be sensitive, with a strict policy in place, students would benefit greatly from not having to write notes in class. Policies should include conditions of use and restrictions on distribution. Faculty might also consider allowing students to complete in-class tests using a computer, thus minimising the amount of time a student must spend writing or rewriting and allowing for more time processing questions and composing answers.

Many students with disabilities already require the support of using a computer in exams, recording lectures, and receiving notes from lecturers and tutors. By embedding these policies into each module these students would feel more included in the group. This would remove the perceived stigma of being different from peers or of needing 'special treatment'.

Principle 7: Size and Space for Approach and Use

This principle points to the need for faculty to think about how best to use the physical space available to them. Faculty should consider the space when planning the design and delivery of modules. The physical teaching space has a significant impact on the educational experience of all students. The integration of technology in the classroom environment, for example, can be of a significant benefit to students. However, if this technology is not used appropriately in the teaching space it can become cumbersome and distracting to students who are trying to engage

with the material being presented. As noted above, teaching should be dynamic and inclusive and consideration of the physical learning space is vital in achieving this goal. Many students learn best when interacting or discussing material and making direct contact with their lecture or tutor. The traditional model of students sitting in rows can become quite tiresome to students who often feel disengaged in this model.

Physical refurbishment or retrofitting of existing traditional spaces can be prohibitively expensive so new ways of using the tradition classrooms and lecture theatres should also be encouraged. While the physical environment may be somewhat restrictive some creative re-purposing is vital if we are to move away from the traditional singular teaching method. This can include the flipped classroom approach, group work, problem-based learning and student-led discussions.

Principle 8: A Community of Learners

This principle stresses the need for the development of a fruitful relationship among student groups and between faculty and students. It is the job of the faculty to provide opportunities for students to interact and collaborate with each other and with the teaching staff. Collaboration among students can have a very positive impact both on student engagement and student retention (Elliot & Decker, 1999; Goodsell Love, 1999; Lenning & Ebbers, 1999, Tinto, 1998).

Peer mentoring is a great example of how this principle can be effectively implemented. This has been very successful in UCD and a number of other higher education institutions. Faculty can encourage further collaboration and peer engagement by facilitating study or discussion groups for each module. Study groups should be established in class and encouraged to meet outside of class time where possible. Group study topics and questions can be set to help structure the study time and boundaries can be set and formalised. Online discussion boards

can be set up using the online learning environment and these can be a valuable tool for students who may not be able to attend campus outside of class hours. A closed private Facebook group can also be set up. This can be a useful way for lecturers to communicate with students. Bringing their educational experience into their social space encourages students to see college life as an important and interesting part of their life as a whole. However, the institutions social media policy should be followed carefully.

Principle 9: Instructional Climate

This principle emphasises the need to ensure that each student has a positive educational experience. All students should be welcomed and an explicit affirmation of inclusivity should be provided at the outset of each module.

Often students with a disability, mature students, and those from socio-economically disadvantaged backgrounds have been told to lower their expectations with regard to their academic performance. This lowering of expectations may lead to a lack of extraordinary effort by the student who believes that their effort will not be proportionately rewarded.

A statement of inclusivity should be provided in each module. This should encourage tolerance of diversity in the classroom and should reassure those who would like to disclose information about their learning needs that this information will remain confidential and be treated with respect. Often disclosure can be very difficult for students with non-visible disabilities so this encouragement is needed. It is the responsibility of teaching staff to communicate that all students will have 'equal access and equal opportunity' (Higbee, Chung, & Hsu p. 63). Pedelty (2003) emphasises the need for teaching staff to include and discuss this statement in their first class so that students are not left to merely read the statement on their own.

Conclusion

Universal Design does not ask for a 'dumbing down' of education but rather provides a framework to ensure that all students have the opportunity to fulfill their educational potential. In the current climate of reduced resources, we know that Universal Design can save time for faculty during the semester and money for institutions as it can improve student engagement and ultimately retention.

Now to further the promotion and implementation of UD in education it is important we begin gathering examples of good practice across the sector. Clear outlines of how particular practices can be implemented in teaching, successes, critiques and measuring of outcomes for all students will be vital. Now is the time to move away from 'selling' UD in education and begin the work of ensuring the 'real world' application of this framework. It is easy to start small, perhaps with an inclusivity statement for your class or department and begin the work of implementing other strategies such as choice of assessment or facilitating study groups. There are a lot of strategies here to choose from and now is the time for action!

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Learning Differences, Cognitive Diversity and Examinations in Higher Education: Bringing Disability Services and Faculty Together - Part1

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Abstract

Exams are hurdles. They are gatekeepers to education, careers, professional endeavors and the articulation of everyone's strengths and gifts. Because both standardized and faculty-made exams are typically not flexible or adaptable, they can pose particular barriers to people who need to demonstrate their knowledge through a variety of ways. Simple changes along the principles of universally designed exams can allow a greater number of students with and without disabilities to demonstrate what they know and can do, while upholding high academic standards and required course content.

Many accomplished individuals are challenged by cognitively-based disabilities (as opposed to physically-based disabilities), that impact access to the information on an exam and ability to demonstrate what they know. These disabilities may include depression, Attention-Deficit Hyperactivity Disorder (ADHD), and learning disabilities. The impact of these conditions can cause students to perform slower and more variably on timed exams, have difficulty with recall of learned information under time constraints, or require them to read aloud in order to comprehend (Nelson & Harwood, 2011a; Ofiesh, Moniz, & Bisagno, 2015). While commonly believed to be related mostly to the constructs of processing speed or reading rate, other aspects of cognition affect how an individual interacts with the demands of an exam.

It is not only students with disabilities who bring a range of cognitive considerations to the postsecondary environment. As the diversity rises among the population of students in higher education faculty will experience greater differences in the cognitive diversity of their students with increased frequency. Disability service providers are already experiencing greater demands for exam accommodations for individuals with disabilities and this need will continue to rise even with universally designed exams in place. For faculty to increase the accessibility of exams and to measure the knowledge and skills that they intend to measure, an understanding of cognition as it relates to exams is needed. The purpose of this paper is to offer disability service providers a basic understanding of how a variety

of cognitive traits may intersect with taking an exam and how to work with faculty in order to increase awareness of cognitive diversity and exam design.

In Part 1 of this article the authors' cover the cognitive demands of exams and the increase in diversity in higher education. In the next AHEAD Journal (no. 4, Autumn 2016) we will publish the second part of the article - Putting Research to Practice: service providers and faculty have the power to change exam design.

Introduction

The demographics of classrooms in higher education have been changing internationally for years becoming more and more diverse in a myriad of ways. Discussions surrounding students and diversity have generally included disability, race, ethnicity, culture, first generation students, and second language learners. However, each of these groups is now becoming even more diverse in terms of the increasing age of students, veteran status, immigrant or refugee status, mental health disorders, and students who have a paucity of academic vocabulary as a result of poverty. Shinn and Ofiesh (2012) created the term 'cognitive diversity' to describe the vast array of cognitive traits found in academic settings. This term captures a larger group of students who, along with many assets, bring with them cognitive profiles that require faculty to rethink traditional modes of teaching. While most individuals' brains share a similar cognitive framework, research suggests there are groups of persons with distinctly variable patterns of thinking and perceiving, in the face of extraordinary creativity, problem-solving and reasoning. For example, individuals with attention-deficit hyperactivity disorder (ADHD) have greater challenges with inattention and distractibility, and individuals with dyslexia are usually stymied with the rapid recognition of symbols, leading to difficulty reading words.

While individuals with disabilities can exhibit differences in their ability to process information and perform academic tasks, the same is true of other segments of the postsecondary population who are not considered to be disabled. Older students returning to higher education, culturally and linguistically diverse students, returning war veterans and refugees exposed to trauma or violence, as well as students from varying socioeconomic backgrounds, also bring a level of cognitive diversity to postsecondary institutions. For example, Washington (2016) found that African-American students from poverty who lived in areas with distinct English dialects often read slower than their peers who spoke without a pronounced dialect. This was found not to be a result of poverty or a reading disorder, but rather a result of the same type of 'code switching' that non-native speakers of English go through when they are learning English and need to construct meaning from their own native language into English. Yet neither group is allowed extended time on an exam because poverty, dialect, and second language acquisition are not associated with disability.

Current data surrounding postsecondary enrollment trends suggests that greater awareness, understanding, and responsiveness to cognitive diversity within postsecondary institutions is needed. Obtaining a postsecondary education for employment is more critical now than ever, shedding light upon the need for all individuals to be able to demonstrate their true aptitude on exams in higher education in order to successfully graduate. In addition to adult students with diagnosed disabilities, it is important to consider the cognitive diversity within a variety of populations. Clearly the face of the 'typical' college student has become 'not so typical' and consequently, university faculty can be encouraged to be judicious when it comes to the design of exams.

Exams that are not adaptable are barriers in the same way that a textbook that is not available through Braille or audio is a barrier to the information within the text. Presently most exams in higher education are paper-pencil based and can only be modified with disability-related accommodations. There are however, a variety of ways faculty can modify exam presentation without accommodations, in order to increase their accessibility to the ever-growing body of diverse learners in postsecondary academic settings today. It is critical for disability service providers and faculty to understand the intersection of cognition and test-taking, as well as how to adapt exams so that they meet the needs of the wider population of students with and without disabilities.

In order to understand how these emerging populations of students bring greater diversity to the classroom, an understanding of what it takes to sit for an examination cognitively is required.

This understanding is the link between meeting the needs of the most rapidly growing populations of students, and success on examinations; ultimately this means increased retention rates and the successfully completion of college or university. This understanding opens the door to the paradigm of Universal Design and universally designed assessments (Block, 2006; Rose & Meyer, 2002).

Exam-related cognitive demands

Some common types of postsecondary exam formats include, but are not limited to, multiple-choice, true/false, fill-in-the-blank, short answer written responses, diagram and/or label, and question and answer. While students and faculty alike are often familiar with these common exam formats, less is widely known regarding the cognitive demands required to access, attempt, and complete these common exams. Recent research from the fields of neuropsychology and neuroscience has helped us to understand what is occurring in the brain when it comes to learning and taking an exam (Gregg, 2010). Moreover, there has been an increase in the amount of research on how learning disabilities and emotions, such as Post Traumatic Stress Disorder (PTSD) and anxiety, (Boaler, 2013; Rutkowski, et al., 2010) influence taking an exam. To help with greater conceptualization, select test-related cognitive demands are presented in three categories. We caution that there is a great deal of overlap and 'back and forth' when it comes to cognitive demands; therefore, this framework is best applied when addressing exam design (see Figure I).

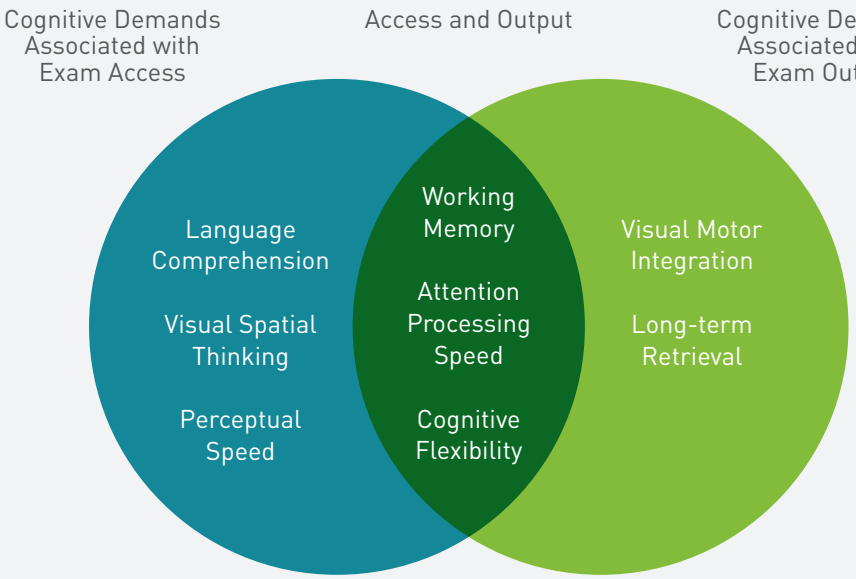

Figure 1: Cognitive demands of exam access and output (Adapted from Shinn & Ofiesh 2012)

First, there are the cognitive demands we refer to as language comprehension, visual-spatial skills, and perceptual speed that primarily influence **access** to the exam. Second, long-term retrieval and visual motor integration primarily influence the student's ability to respond to the exam or demonstrate knowledge; we refer to this as **output.** Third, working memory, attention, processing speed, and cognitive flexibility are mediating influences that affect both exam access and exam output.

Cognitive demands associated with exam access

Language comprehension

Language comprehension, or the ability to understand spoken and/or written language, is fundamental to accessing exam content. Within the context of taking an exam, language comprehension is different from the ability to accurately hear sounds in spoken words or the ability to decode or read text. Rather, language comprehension refers to the student's ability to understand what a professor is saying or asking for, be it in spoken or written form. Often difficulties can arise as the student may misunderstand directions or directional words. The ability to comprehend language in this vein may, or may not be related to whether the language is native or non-native to the speaker. Language comprehension differences can be found in both non-native speakers of English, as well as those with language disorders. It is common for students with weak language comprehension to show high levels of performance on nonverbal tasks (mathematical calculations), unless the nonverbal tasks require a great deal of language comprehension (applied statistics).

It is critical for both faculty and exam authors alike to appreciate the importance of language comprehension because most, if not all, postsecondary exams require some level of language comprehension. Across all subject areas, including chemistry, biology, world religion, and so forth, exams include written directions and specific problems posed through language, which are separate from important technical and academic vocabulary. Furthermore, inattention, anxiety and depression, three of the fastest growing conditions in the modern world, significantly contribute to inefficient language processing.

Visual-spatial thinking

While language comprehension encompasses the verbal demands of exams, visual-spatial thinking is also needed to access exams. Visual-spatial thinking (distinct from visual acuity) refers to the ability to perceive, analyze, synthesize, and think with visual patterns, including the ability to store and recall visual representations. Visual-spatial thinking allows the student to make sense of and work with nonverbal, visual input. Some examples of visual-spatial demands required for taking an exam include gauging time, reading a map for directions or topography, interpreting graphs or flowcharts, filling in bubbles on Scantron® exam forms, labeling parts of an image, graphing an equation, organization and planning of projects, creating a timeline, and recognizing patterns.

Perceptual speed

Most exams require some combination of reading, writing, and/or math skills; therefore, a certain level of perceptual speed for numbers and letters is required to access exams. Perceptual speed is measured by an individual's ability to rapidly and automatically interpret letters and numbers, a cognitive trait that has been found to be lower than average even among highly

intelligent mathematicians or writers. Horn and Blankson (2012) found that in homogeneous samples of young adults, measures in which there is much emphasis on speediness correlate near zero, perhaps negatively so, with exams that require solving difficult problems. This often leaves faculty perplexed when some of the most analytical mathematicians need more time for simple calculations. Indeed, perceptual speed often impacts academic fluency, which is the 'ease and speed by which an individual performs simple to more complex academic tasks'. A common mantra in education is 'first you learn to read, then you read to learn, first you learn to calculate, then you calculate to learn' the premise being that once a student masters foundational academic skills, then those basic skills serve as the foundation for deeper, richer learning. In the realm of an exam, a student must be able to quickly read an exam question, solve a simple equation, or write words in order to have enough mental energy to think critically about the exam content.

Cognitive demands associated with exam output

Visual-motor integration

All exams require some form of output, by giving a speech, writing an essay, executing pencil-to-paper calculations, or even running a mile. Assuming every postsecondary student takes exams that require written output, the cognitive demand of visual motor integration holds great weight. Specifically, visual motor integration is the ability to coordinate information from the eyes with body movements; '[it] is the degree to which visual perception and finger-hand movements are well coordinated' (Beery, Buktenica, & Beery, 2010). In turn, the cognitive demand of visual motor integration encompasses copying text, writing spontaneously, drawing a diagram, aligning numbers for a math calculation, filling in a bubble, circling an answer, and so forth.

For example, a student with dysgraphia, a learning disability which impacts handwriting legibility must copy a demographics chart from a board and then write an essay explaining the significance behind the chart for an exam. Compared to his classmates, he needs to exert more mental energy to visually comprehend the chart and then process this information through his fingers and onto the page. Complicating matters, he must also expend more mental energy or cognitive resources to form each and every letter.

Long-term retrieval

Ideally, exams assess mastery of course content by asking students to think back and demonstrate what they have learned. The cognitive demand of long-term retrieval refers to the ability to recall what was previously learned.

Long-term retrieval has two components:

- one, the student must be able to accurately learn course material and store that information in memory, and
- two, the student must be able to retrieve or 'find' that information during the exam.

Long-term memory is also impacted by how effectively the information is organized in storage since this impacts how efficiently a student can retrieve it. A student may have studied for several hours for his sociology exam, but if he has long-term retrieval weaknesses, it may take longer to retrieve that information while writing an essay. The tip-of-the-tongue phenomenon is another good example. This phenomenon was first defined as an inability to retrieve a word even though there is a feeling of knowing the intended word (Brown & McNeill, 1966).

Subsequently, students with compromised retrieval systems often know course material and have received high marks throughout the course, but cannot demonstrate that knowledge when required to do so quickly on multiple choice exams, exams that include problem sets, and written expression. More time can be a significant adaptation for these students.

Cognitive Demands Associated with Both Exam Access and Exam Output

Working memory

Working memory is fundamental to taking an exam. Working memory refers to the ability to hold information in awareness while performing a mental operation or manipulation on the information. Moreover, working memory is highly related or central to all types of academic learning including reading, mathematics, written language, and reading comprehension. Unlike long-term retrieval, working memory focuses on recall while work is being done.

Rebecca, a 24-year-old graduate student, reads the essay prompt for her course final. She must hold onto the content of the prompt, while simultaneously reflecting upon information learned in the course. To complicate matters and place heavier demands on working memory, she must then hold that information while thinking about the best way to convey her knowledge in written form.

Miles is a 19-year-old college freshman taking his Calculus exam. Miles reviews the first problem then begins to execute his calculations. Miles must perform each calculation step while simultaneously thinking about the next move, thus placing demands on his working memory.

Of all the cognitive demands associated with exam taking, working memory may be the most fundamental and multi-faceted (Swanson, 2004). Indeed, Baddeley breaks working memory into a three-component system (Baddeley, 2000).

- The first component is the 'phonological loop', which refers to holding and manipulating sounds or speech-based information while performing a mental operation. In Miles' case, he must use a verbal retrieval system for recalling basic math facts (e.g., 5 + 5 = 10) as he solves more complex calculations.

- The second component is the 'visual-spatial sketch pad', which refers to holding and manipulating visual, spatial, and kinesthetic information in awareness in the form of visual imagery. If Miles needs to graph an equation for his midterm, then he will need to use his visual-spatial sketchpad as he works.

- The third component of Baddeley's working memory systems is the 'central executive system', which controls the functions of phonological loop and visual-spatial sketchpad.

This complex component system brings into focus the complexity and far-reaching aspects of working memory. Students with fewer working memory capabilities are likely to be challenged and taxed on a variety of exams, regardless of content area.

Attention

Similar to working memory, attention is critical to exam taking. While attention is a seemingly simple concept, the neurological underpinnings required for us to pay attention are complex. Attention requires selecting and focusing on what is important, maintaining that focus over a period of time, filtering out or ignoring what is not necessary and visually attending to detailed elements such as mathematical notations and punctuation (McCabe, Roediger, McDaniel, Balota, & Hambrick 2010).

Examples of how inattention can play out for a student on common postsecondary exams are:

> One student, Anna, has significant depression, which impacts her concentration and attention. During her anatomy course final, which includes several multiple-choice questions, Anna must pay careful attention to the questions; for example, multiple-choice questions with words or phrases such as all, including, excluding, and best matches. These require Anna's close attention not only to the content or purpose of the question, but also to discrete words. If Anna misses the word except or not due to inattention, then her answer may be wrong but unrelated to her understanding of the material (e.g., anatomy of the lungs), and solely due to inattention.

Jose is in Anna's course, and he too is taking the anatomy final. Unlike Anna, Jose is an adult student with Attention Deficit Hyperactivity Disorder (ADHD) and has consequent difficulty filtering out extraneous visual input and attending to visual details on the exam. The lecture hall where the exam is being proctored has several windows looking out onto a busy street. Jose must exert more mental energy than his peers to filter out or ignore the distracting view of bustling cars and pedestrians, leaving less mental energy to demonstrate his knowledge of the human lung.

Processing speed

Assuming that most postsecondary exams must be completed within a set time frame, processing speed is another core exam taking demand that impacts both input and output. Indeed, many higher education exams are timed according the length of a class versus the purpose or function of the exam. While different researchers refer to the cognitive construct of speed in different ways, processing speed, in a broad sense, refers to the ability to process or make sense of incoming information and to then produce a response. Students with slower processing speed, whether due to a learning disability, depression, or other contributing factors, oftentimes do not finish exams within standard administration time, and use the most time on exams that involve math reasoning or math calculations (Ofiesh & Hughes, 2002). When students are unable to access an entire exam due to limited time, then their exam performance may be reflective of slower processing speed, among other constructs, and not an accurate measure of their understanding of the exam content.

Cognitive flexibility

Deak (2003) writes:

> Flexible cognition entails the dynamic activation and modification of cognitive processes in the response to changing task demands, representations and responses based on information. As task demands and context factors change, the cognitive system can adapt by shifting attention, selecting information to guide and select upcoming processes, forming plans, and generating new activation states to feed back into the system in order to adjust goals or self-correct.

Cognitive flexibility is one aspect of executive functioning and a characteristic of many individuals with learning differences. In an exam, cognitive flexibility shows up most apparently when students are required to prioritize how much time to allot to specific exam items or sections, know when to persevere on a difficult item or when to move on, generate multiple approaches to problem solving, synthesize multiple sources of information, and recognize mathematical concepts when the algorithms appear in a variety of contexts. The ability to be flexible in one's thinking can be tremendously impacted by a learning disability, anxiety, depression, mental illness. We can help students to demonstrate their knowledge on exams by allowing them time to employ the same organizational learning strategies they used to successfully master course content.

Increasing Diversity in Higher Education: Exams and Persons

In the previous section the most common cognitive traits associated with taking exams have been briefly explained.

What does this all mean in terms of retention and success for the large numbers of diverse students with and without disabilities entering higher education?

Here we look more closely at these diverse groups of students and discuss how highly capable learners can successfully gain entrance into higher education, and become stymied by a variety of learning differences as a result of many conditions, some not related to disability. It can be helpful for disability service providers and professors alike to better understand the cognitive diversity or specific cognitive abilities individuals may bring to the learning environment.

Populations are described with respect to how some individuals within each group may interact with an exam as a result of circumstance, experience, or disability.

Learning disabilities

More and more students with learning disabilities are attending colleges and universities.

> Learning disabilities cross-culturally describe significant and impairing difficulties in reading, writing, and math domains (Mugnaini et al., 2009).

Within the scope of this article, students with learning disabilities exhibit functional limitations in their ability to access and complete exams. Deficits in speeded performance are one of the most common ways in which learning disabilities can impact an individual. This is why extended time is often requested by individuals with learning disabilities in postsecondary settings. More time on exams helps to ameliorate the variable processing speed, rapid word recognition, long-term retrieval and working memory. Students with learning disabilities often need extended time on a variety of academic tasks. These include organizing ideas when writing (Gregg, 2010), reading text and performing math calculations.

Students with learning disabilities are also at a disadvantage when it comes to allocation of cognitive resources. Adult students with learning disabilities allocate their mental energy or cognitive resources differently than their same age, non-learning disabled peers when it comes to reading, writing, and math (Meyer et al., 2001).

For example, students with reading disabilities, such as dyslexia, or poor readers in-general, must place heavier cognitive demands on word identification, thereby draining other cognitive resources needed to comprehend or construct meaning from text (Ofiesh, et al., 2004). Similarly, students with writing disabilities, such as dysgraphia, have to work harder and longer when it comes to handwriting (spontaneous writing and copying), spelling, and integrating capitals and punctuation (Gregg, 2010). In turn, when exams require written output, students with writing disabilities have fewer cognitive resources available for demonstrating their concept mastery or knowledge. Moreover, fearful of misspelling words, students with learning disabilities may also ‘dumb down’

their word choice in addition to limiting the amount of their written output. The same pattern is true for math. When students have to exert extra energy to recall basic math facts, fewer cognitive resources are available for the intended content of the exam (Swanson, 2004). Simply put, adult students with learning disabilities exhibit impairment in the exam-related cognitive demand of speed.

Attention Deficit Hyperactivity Disorder (ADHD)

Research demonstrates a co-morbidity or concurrence of learning disabilities and ADHD (Mugnaini et al., 2009). It is estimated that 2% to 8% of college students within the United States have ADHD. This statistic does not reflect students with undiagnosed ADHD. This is noteworthy since Biederman, & Faraone (2005) studied a group of 19-year-olds formerly diagnosed with ADHD and found that while 60% of the group no longer met full criteria for ADHD, 90% still presented with ADHD symptoms. Indeed, individuals with ADHD have life-long difficulties (American Psychiatric Association, 2006), underscoring the need for support at the postsecondary level. Adult students with ADHD exhibit impairment in the following exam-related cognitive demands: attention, working memory, long-term retrieval, and processing speed. As in Jose's case, he must exert more mental energy to filter out the extraneous visual and auditory stimuli outside the window of his lecture hall. Moreover, Jose must work harder to sustain attention to the exam over time, meaning that his cognitive resources are drained or taken away from the actual purpose of the exam. For longer, more complex problems, fewer working memory resources can lead to small errors or mistakes, not reflective of poor course mastery, but rather of functional limitations associated with ADHD. Similarly, many students with ADHD exhibit weaknesses in the cognitive demand of long-term retrieval. Furthermore, ADHD symptomology in higher education is pervasive across cultures (Norvilitis, Sun, & Zhang, J., 2010).

Language disorders

Language disorders such as receptive and expressive aphasia are different in nature and manifestation than academic difficulties sometimes associated with being an English language learner. However, for some individuals who struggle with a language disorder, comprehending English functions as if it were a foreign language, even if it is their native language. Individuals with language disorders exhibit impairment in comprehending and/or using spoken, written, or other symbolic language systems. While about one million people in the United States have aphasia (partial or complete impairment of language comprehension caused by stroke, or brain damage), many individuals attend school from early on with mild to moderate language comprehension difficulties and are considered to have developmental language disorders. Fahey (2000) in a chapter on Oral Language Problems, states

> children do not outgrow language and learning problems. Rather, the problems change and manifest differently over time as demands increase in complexity (p. 138).

Anxiety: situational, generalized, and co-existing

Survey data indicates that approximately 18% of American adults have an anxiety disorder (Kessler, Chiu, Demler, & Walters, 2005). Students with ADHD and/or learning disabilities can experience anxiety (Mugnaini, et al., 2009). While many students with learning disabilities and/or ADHD may not meet criteria for clinically significant levels of anxiety, they do report increased scores on measures of anxiety (Nelson & Harwood, 2011a; 2011b). There is a wealth of research on the interplay between anxiety, clinical or not, and academic performance (Eysenck, Derakshan, Santos, & Calvo, 2007; Nelson & Harwood, 2011a; 2011b).

Individuals with anxiety exhibit particular difficulty with the cognitive demand of long-term retrieval, working memory, and processing speed, all critical components to performing well on an exam.

Depression

According to the World Health Organization (2004), depression is the leading cause of disability in the world. This is particularly noteworthy within academic settings because depression detrimentally influences cognitive functioning, academic achievement (Nelson & Harwood, 2011b), memory recall (e.g. long-term retrieval) and recognition (Maag & Reid, 2006).

> Because depression impedes learning and achievement beyond LD itself, depressive symptomology among students with LD has implications for educational programming and assessment (Mugnaini et al., 2009).

Because depression can influence alertness, a depressed student may show impairment in the test-related cognitive demands of attention and speed of performance. There is also an interplay between depression and memory (Burt, Zembar, & Niederehe, 1995), such that students with depression show impairment in the test-related cognitive demand of long-term retrieval.

Post Traumatic Stress Disorder (PTSD)

Rutkowski, Vasterling, Proctor, & Anderson (2010) studied military personnel before and after war zone exposure to ascertain the impacts of PTSD symptoms (e.g. intrusive thoughts, poor concentration, and hyper-vigilance) on test-taking. These researchers found that post traumatic stress symptoms have

potential detrimental effects on standardized exam performance. This is significant because over 1.5 million service members have been deployed to war zones (Rutkowski et al, 2002). A substantial number who return not only present with PTSD, but also impaired cognitive abilities in processing speed, short-term memory and long term retrieval, as well as other areas of cognition (Tanielian & Jaycox, 2008). Moreover, many veterans return and pursue postsecondary education funded by their government (Rutkowski et al, 2002). Many individuals who seek refuge or asylum enter higher education with the hope of rebuilding their lives.

If we speculate that Rutkowski's findings map onto a percentage of the civilian population exposed to or living with trauma or violence, such as the recent influx of refugees to all parts of the world, then the need for exams that are designed for a broad array of cognitive diversity is all the more critical.

Linguistic diversity

Within the United States alone, there are growing numbers of culturally diverse students, including English language learners (ELL). Also of importance, data in the United States indicates that culturally and linguistically diverse students, including ELL students, have higher rates of school drop-out, disproportionate representation in special education, and the lowest outcomes of all students. This unfortunate statistic calls even greater attention to the need for postsecondary educators to be aware of and sensitive to the cognitive diversity and consequent needs of this already underserved population of students. Much like students with language disorders, students new to the English language carry associated challenges into postsecondary education settings, specifically in regards to the test-related cognitive demand of language comprehension (Rasmussen, 2010).

Poverty

There is an expanding corpus of research discussing the relationship between poverty and education (Pfeffer and Glodrick-Rab, 2011). Sadly, educational outcomes for students with some family poverty experience are far from ideal. For example, '22 percent of children with some family poverty experience do not graduate from high school, a figure about three times greater than the 6 percent rate for children with no family poverty experience' (Hernandez, 2011). Students from an impoverished or financially disparate background, different from the majority of their postsecondary peers, often have weaker academic skills. They exhibit less developed literacy skills due, in part, to living in communities with less access to print, such as the lack of bookstores and libraries funded by local tax dollars. This, in turn, can impact the cognitive demand of language comprehension and academic fluency.

Increasing age

According to the National Center for Education Statistics (NCES), during the 2007-2008 academic year, 23% of the total postsecondary student population in the United States was age 30 or older (Institute of Education Sciences, 2010). Of note, older students are and have been returning to postsecondary schools in substantial numbers. In 2002 they were subsumed under the data category of 'nontraditional' students, which includes students who delay enrollment, attend school part time, work full time, have dependents, are single parents, and so forth. Research tells us that students who do not start postsecondary education in the same calendar year as high school completion are going back to school in record numbers for additional education and training (Kim, Collins-Hagedorn, Williamson, & Chapman, 2004). With aging come changes in cognition, most notably short-term

memory, and another type of memory known as episodic memory. These changes begin to appear in midlife, and are exacerbated with anxiety and depression.

In summary, given the intersection between cognitive diversity and exam demands in higher education, there is an apparent need for creating and using exams that address the needs of all learners while staying true to what faculty members want to measure. Further, when exams are designed in a manner that removes barriers to access and barriers to output, then exams can be considered more true measures of a student's concept mastery, knowledge and skill set.

This article was adapted from: Cognitive Diversity and the Design of Classroom Tests for All Learners (Shinn & Ofiesh, 2012).

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Is it too Soon to Mention Christmas?

Trevor Boland

Trevor Boland is currently the Assistive Technology Officer for the Northside campuses of DIT. In his role he supports a wide range of students with disabilities regarding varied technologies that can assist their needs. His background and qualifications include special education, art, design and digital media as well as assistive technology. Trevor also presents to staff and students across campuses as he advocates the use of apps, websites and browser plugins to empower learners through technology and to inform staff about the value of these technologies.

Christmas is a time for gifts of all sizes, shapes and colours with even more choices of wrapping paper, cards and ribbons. It can be an overwhelming blur of choice when trying to match the right present to the right person. A similar dilemma can exist with technology. As app stores increase their selections, the search for suitable apps to support students can be lengthy and tedious. This can lead to a type of technology-based Stendhal syndrome, where the kaleidoscope of choices can be dizzying, deterring some people from exploring the possibilities of technology. To help alleviate this issue Frances Boylan, eLearning Development Officer in Dublin Institute of Technology (DIT), developed an initiative called The 12 Apps of Christmas.

December 2015 marked the second year of the 12 Apps project which ran over a two and a half week period, offering free educational app suggestions as starting points to hook students and educators. These 12 free apps were pitched to appeal to the differing learning styles of students and to place students at the centre of their learning experience. The website provided a page for students that explained what personalising their learning means. A link to a **VARK** (visual, aural, read/write, kinesthetic) learning styles questionnaire was also provided and the students were encouraged to fill in the questionnaire to determine their preferred learning style. It was also suggested that they then take some time to categorise their results for themselves with regard to how they prefer to 'access information, 'engage with information', and 'express their understanding of information'. Examples were provided to help them undertake this task.

Each day's app came with a review page to explain the purpose of the app, the links to download the app and its basic functions. The added value provided every day was that each app was also evaluated in terms of how learners could match the qualities of the app to their visual, auditory, read/write and kinesthetic learning strengths.

Frances Boylan invited me to collaborate with her to advocate technology not only for students with disabilities but for all students and staff regarding practical educational solutions using commonly owned devices. As an Assistive Technology Officer in DIT I see that computers, laptops, tablets and smartphones have become ubiquitous and an intrinsic part of the education culture. A concept that the 12 Apps project embraced this year centred around the 'personalisation of learning' with technology, moving away from labelling students and instead onto labelling a learning approach that in this case involves technology.

> The personalised learning approach empowers students to individualise their learning experiences to address 'specific learning needs, interests, aspirations or cultural backgrounds' (Abbot, 2014b).

The diversity of freely available apps allows students to meet a range of educational needs, including having text read out to them on their devices, planning their time, managing workloads, enhancing their note-taking, as well as aiding in essay writing and even providing strategies to manage procrastination.

> Personalized learning is a reaction against standardized, mass-produced and one-size fits all education (Wily and Hilton, 2009).

The range of high quality and free apps makes them accessible to students in higher education. For example, Google has added a new dictation feature to Google Docs to further support

more flexibility for students. Microsoft has made their range of applications free to higher education students including the OneNote application for note taking and organisation. Such explosion of choice means that students can try new technologies. If a solution doesn't match the student's learning style and lifestyle they can move on and try another. Rather than a 'one size fits all' approach, now there is more of an 'at least one size will fit' approach, that can create a more productive and hopefully more positive student experience.

Writers like Gerstein argue that technology has developed so much that we now refer to the integration of technology into our learning, teaching and assessment practices as Education 3.0. This is a more of a heutagogical, connectivist approach to teaching and learning.

> Education 3.0 recognizes that each educator's and student's journey is unique, personalized and self-determined (Gerstein, 2014).

This connectivist approach in particular can have an added benefit for students. As some students own a mixture of mobile and portable devices, the flexibility of technology can cross over enhancing functionality and ease of use. For example, apps like 'EasyBib' are available as Android and Apple apps as well as being web-based or as an add-on to Google docs. Such multimodal accessibility enables students to create bibliographies across all their devices. This flexibility adds to student productivity as adaptable devices offer greater independence, whereby students can work seamlessly on a common goal. Users can also now create their own app palettes through a pick n' mix approach to technology, such as note taking with OneNote, creating presentations with Google Slides and using Pocket to collect their bookmarks across all devices. Students are no longer tied into purchasing an Apple-only or a Windows-only technology arsenal.

This growing fluidity in technology empowers students not only to select their preferred devices but to fill them with their preferred apps, giving them more control over their learning.

This concept of personalisation can also have benefits for the transition from college to the workplace.

> We need to develop learners who are skilled at personalising their learning, as the changing nature of knowledge means this is a fundamental skill for today's workforce (Olsen, 2011).

Personalisation leads to a more intrinsic need for learners to engage with technology and the skills that are created from this need can increase digital literacy as well as be transferred to future technologies and applications in the workplace. As an immediate and long term approach it has personal and societal benefits as confident learners can become confident contributors to society.

Although the focus of the 12 Apps initiative cantered on personalisation which is relatively new, the response to the contents of the website and accompanying apps was overwhelming. The website had just under 15,000 hits and the app had approximately 700 downloads, with the Twitter following reaching just under 2,000. This was a dramatic 300% increase from the first year of the project which had 700 participants.

While it may have been aimed primarily at students, educators too had a role to play in providing the kind of environment that encourages personalisation. A resources page for educators was developed which explained the benefits of personalised learning and provided useful tips and hints. The registration sheet showed about one third of students and two thirds of educators participated in the project. These worldwide participants shared their app experiences via comments on the website or on Twitter using the #12AppsDIT hashtag. The concept of personalisation

struck a chord with participants and was an indicator of the growing interest in flexible and tailored learning experiences, enhanced and facilitated by technology.

Collaborating on the 12 Apps initiative did open my eyes to the varying ways technology can increase the possibilities for students in accessing, engaging and expressing themselves through technology. It also revealed how attitudes to technology are rapidly changing. For example, the 'bring your own device' (BYOD) approach supports educators to use devices and apps in the teaching environment that take advantage of smartphone ownership to enhance student engagement in the learning environment.

Needless to say I am a fan of personalised learning and I see great potential for it to support all types of abilities. However I do wonder if students have yet fully embraced this connectivist and personalised approach. I meet with students daily and from my experience I have seen only a small number of students recognising and applying this personalised learning approach via technology. I am only beginning to explore how to pitch this approach to students and I hope to develop material to teach students about the benefits of personalisation in the near future.

If you haven't yet experienced this festive themed initiative, the 12 Apps website **www.dit.ie/the12appsofchristmas** can be accessed at any time to learn more about personalisation in learning and apps that can support it. The '12AppsDIT' app is also available via Google Play and iTunes.

Apps are still new to the education scene and have yet to fully flourish so more remains to be discovered about their growing place in the learning and teaching space. I think it is safe to say that apps are not just for Christmas, they're for lifelong learning.

Achieving Social Inclusion for Students with Non-visible Disabilities: a case study of a student studying for ITE with an anxiety related disorder in an online higher education institution

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Introduction

Although Irish legislation and policies provide frameworks for inclusion, the number of students in college with a disability still lags behind those without a disability. To date there has been little research regarding the social inclusion of students with non-visible disabilities such as those with anxiety, agoraphobia or other mental health issues. This research will address this lacuna. This paper presents a case study of a young man (Mark - pseudonym) diagnosed with agoraphobia who dreamt of becoming a teacher but was unable to attend mainstream college because his disabling condition made it impossible for him to attend face-to-face lectures and classes. He had already tried and failed in two colleges because he had not been provided with reasonable accommodations before he applied to College A where he was accepted into a teacher education programme. This paper identifies the learning points for social inclusion in teacher education for students with non-visible disabilities.

Background

There are many types of supports available for students with physical and sensory disabilities. However, less obvious are the supports that are required for students identified as having non-visible disabilities such as mental health issues. Research carried out in 27 HEIs estimated that 10.9% (n=1,054) of students with disabilities have a mental health difficulty (Association for Higher Education Access & Disability 2015). Given the recognised stigma attached to mental health issues, the real number of students with mental health difficulties is possibly much higher. The Irish Government requested the Central Statistics office conduct a National Disability Survey (NDS) following the 2006 Census of Population with the aim to discover the severity and impact of disability (Central Statistics Office 2008). People disclosing a psychological or emotional condition represented 34% of the overall population, 19.2% reported using an aid such as a support group, drop-in centre or helpline (Central Statistics Office 2008).

Methods

A case study approach utilising qualitative methods was taken (Sarantakos 2013) (Yin 1991). Three in-depth face-to-face interviews were carried out: one with Mark, the student in question, one with the College Registrar and one with the Director of School Partnerships. Two sets of documents were analysed, the College's Quality Assurance documents and the Teaching Practice Assignment Form. Ethical permission to conduct the research was granted by the College's Ethics Committee. The British Education Research Association guidelines on ethics (BERA 2011) were complied with and ensured that respondents gave informed consent and were not hurt or harmed in any way. Pseudonyms are used for the College and the student. The data was analysed and the findings are presented within a framework that corresponds to Lincoln and Guba's structure (1985 cited in Creswell, 1998 p.35). The first step is the identification of a problem (Creswell 1998).

The problem

The problem as stated by the student was that he could not sustain an Initial Teacher Education programme because of his disabling condition. Mark's dream was to be a teacher.

> I've always wanted to be a teacher from a really young age. My grandfather was a teacher and he was a Principal of a technical school and then he taught in secondary school. I have an uncle who is also a teacher, also a Principal; and my three sisters are teachers as well, so there is a long tradition of teaching in the family.

He tried to become a teacher but it did not work out for him.

> When I did my Leaving Cert, I got enough points [to be accepted to a Teacher Training College], I went to Dublin and I was really enjoying the course and I was delighted to be fulfilling my dream to qualify as a teacher. But unfortunately while I was there, I developed a panic disorder, which got worse and worse. Agoraphobia was diagnosed by my GP. When I explained the symptoms of chronic panic, feeling of extreme anxiety, nausea, getting violently sick, especially this was triggered by kind of crowded enclosed type areas; a feeling that I couldn't breathe, claustrophobia and hyper-ventilating. I was diagnosed with a chronic panic disorder, it would escalate out of control, I was finding it very difficult to sit through lectures; to sit on buses; to travel from home to college; and I was finding that the whole college experience was just too difficult for me. So after the first year, I took a year out to try and see could I sort out difficulties with my panic disorder. And I returned then but I only lasted a couple of weeks because I felt that it was just too much for me. I was just feeling sick all the time and dizzy and just having constant panic attacks.

He left the Initial Teacher Education (ITE) college and enrolled with an online college that provided general degrees rather than ITE. However, the Teaching Council, which governs the teaching profession in Ireland, decreed that in order for teachers to be registered they needed a recognised accredited teaching qualification (Irish Statute Book 2001). He then began investigating if he could apply for an ITE programme.

> I looked into it and I emailed all the different programmes in relation to applying to do a HDip, but they all told me that, 100% attendance was vital and I didn't get much of a positive response, I felt that I got very little support or felt that they just thought I was being ridiculous. There was no way that I could qualify unless you met every single requirement with that. So that June, I found out that College A were now offering the HDip (Higher Diploma) in Education. I was so happy because I felt this is the one 'lifeline' or the one thing that can give answer to my prayers, if it worked. I didn't know if College A would be able to make their course any way accessible to someone like me who couldn't travel or suffered from panic attacks, some kind of agoraphobia.

The next steps

He telephoned the college and explained his predicament to the Admissions Officer, who put him straight through to the Registrar.

> I remember ringing the College and I spoke to the Registrar; I remember that conversation with her, I remember just from the word go she was kind and caring and nice and told me that College A would see me like every other student and that they would let me do an interview, actually over the telephone, they would record it and that they would then base my acceptance on whether or not, just like everyone else, just if I was right for the course, that they wouldn't discriminate against my disability. They said, 'take one step at a time' and they would first of all see how I got on with the interview and then if I was successful we'd talk again.

The college's response

The Registrar describes what happened:

> Now that was an instance where the student was very aware of the reality of his condition, and the need for the college to be able to meet his needs in order for him to succeed. He did declare it even in advance of applying. So he spoke to someone in the Admissions Office, they put him into direct contact with me. I had a conversation with him where he outlined what his condition was and how it presented itself and what he experienced as a result, and he also outlined how he attempted to undertake one of these programmes of study previously, and how that had impacted him because it was a traditional face-to-face provider and going into that physical location wasn't somewhere that he was familiar and comfortable with, created further anxieties for him. So there was no 100% commitment given and I basically outlined our stances as an institution, in terms of, wherever we can make reasonable accommodation we would.

The College Registrar described how the interview was conducted online:

> Well it was straight forward - as an online college it was very obvious solution for us that we would use Skype; so it was felt that he would still be able to satisfy all the requirements in terms of providing his ID, and meeting the panel and engaging with the panel through video, but as much as an interview is a false environment anyway and can present challenges for anybody, there was no way that this particular applicant was going to ever be able to even get past that first hurdle if we didn't make those accommodations. So we discussed that as an option with him in mind that obviously I'd still need to discuss it with the panel and ensure that they were also comfortable with it.

The Director of School Placement also recalled Mark's enquiries, application and interview:

> I received a phone-call from Admissions; they said they had somebody who couldn't come to interview because of this condition, for a 'special reason'. But he had a very fine application, I received a phone-call from the gentleman later on that day, and he just sounded so, ordinary, warm, but he said he could not come to an interview. So I asked him: 'Why did he want to become a teacher?' Then it all came out about the agoraphobia, and I was like, 'Well how do you manage?' and he said, 'Well actually I manage. I'm in a very nice school and I've held a teaching position for a number of years. Now it wouldn't have been a Department [of Education] recognised (qualification), however, he had practice at teaching, he was accepted into the school and very happy; he had his degree but he didn't have a teaching qualification.

College quality assurance guidance

The college staff were supported by existing QA guidelines. College A's position on the social inclusion of students is encoded in the quality assurance policy entitled, **Procedure for the Management of Students and Assuring the Quality of Student Support** in section 1.4 Learner support: Access and inclusion Policy. This section outlines the College's obligations and responsibilities towards students with disabilities:

> College A adopts the AHEAD Charter for Inclusive Teaching and Learning (2009) and reflects this in quality assurance policies and procedures and the teaching, learning and assessment practices of the College. The College is committed to promoting access for people with disabilities and additional needs. The College supports and enables students with physical disabilities… special psychological needs and medical conditions that can have an impact on day-to-day activities, to participate in and successfully complete College programmes, as far as is reasonably practicable and within any constraints laid down by HETAC or relevant professional bodies.

The learning point for social inclusion here is that colleges need to be cognizant and explore a range of ways they may meet their legal obligation to provide reasonable accommodations at all stages of the journey into college, through enquiries, admissions, interviews and teaching practice context.

The teaching context

College A delivers web-based blended learning programmes for students in Initial Teacher Education. Although many of the lessons and tutorials are accessed online, students also attend on-site meetings and are also required to undertake three teaching placements as part of their teaching qualification. Mark did not have any problems or challenges with the teaching practice aspect of the programme. He recounts:

> The teaching practice was the part of the course that I enjoyed most and I would have really prepared and really worked hard for that part. I just love teaching and I just get a buzz from it. I felt that throughout the course that I learned so much, even though I had been teaching and qualified for a number of years, in relation to the documentation, lesson plans, resources, I just learned so much. I got fantastic advice from lecturers and mentors and I know it really enhanced my teaching. And I think that the classroom situation is kind of my own environment in that, and I will always feel extremely calm and I suppose in control in a classroom, so I felt that my condition definitely doesn't affect my professional capacity as a teacher or that. And I felt that if you know first-hand for yourself what it might be like to suffer from any type of disability; it definitely made me so much aware that there's so much going on in our students' lives; like outside the classroom, and even within it, you have to be so much more aware of and compassionate towards that; different students have different limits, different situations and health problems mean that they can't participate in classroom activities like other students.

His mastery at teaching was demonstrated by the feedback he received from the Teaching Practice Assessment Form which showed his work was of a high standard and that he was committed and dedicated to his work and the pupils. The Director of School Partnerships noted how Mark at excelled at teaching practice.

> He topped the class in what we call School Experience of Professional Practice, we don't call it teaching practice because people are in the school all day so it's an entire experience and they're examined, while they're examined on their classroom teaching, they're also examined on, you know, their portfolio which includes how they participated within the school; but this man was heading to the top from early on.

The College Registrar also commented:

> There is a requirement to undertake teaching practice and it's a specified period of time on the programme he was applying for; that wasn't an issue for him at all because he was already employed by a school that he was able to use. He had the full support of his school Principal for this programme. The references that came for him were extremely impressive, so there was no issue whatsoever with him being able to undertake his teaching practice

The programme also requires students to attend 'on-sites'; these are face-to-face teaching and learning sessions in a college setting. Some of these are subject-based and some of them are based in regional centres throughout the country. In this instance, the student was facilitated by ensuring that he could attend an on-site that was close to his home rather than having to go to a large city. The Registrar explained:

> There was an educational centre close by that he was very comfortable with, familiar with visiting and would have had no issues with attending, and the idea was if we did use that education centre he would then be able to attend the majority of the on-sites. It worked out well because the majority of the on-sites he was able to attend because they were in the educational centre that he was familiar and comfortable with.

Recommendations

This paper identifies learning points for social inclusion of students with non-visible disabilities, in this case with agoraphobia, in a HEI that uses an online blended approach to teacher education.

These include:

- ensuring admissions and faculty staff are aware of their responsibilities and can identify flexible options for students with disabilities which enable the student to demonstrate competence;

- liaising with placement providers to prepare for a diverse range of students entering ITE and agreeing principles assessing competence standards for these students, in this case ensuring that his teaching practice was conducted locally in a school that he was familiar with, to the selection of sessions in his region;

- quality assurance policies are in place to ensure that reasonable accommodations are available at each stage of the learning journey from the initial interview;

- providing inclusive teaching, for example, programme content involving accessing online pre-recorded lectures, contributing to online forums in each subject and participating in synchronous tutorials and webinars.

AHEAD has also identified research in the UK by the Equality Challenge Unit (ECU, London, 2015) which recommends continuous professional development for placement staff, for example workshops with tutors, placements mentors and disability services to discuss the issues of competence and accommodations.

It suggested students may need direct support from disability services whilst on placements. This can be simply re-assurance that their needs are accepted. Where student placements are at a distance, Smart phones and Skype can assist in college and student staying in touch.

Evaluation, such as this case study, should be documented and made available, for example in course reviews, and student feedback can provide vital information on whether accommodations are effective.

Conclusion to the case study

When the final results for the programme were released, Mark had achieved the highest marks in his class but was not able to attend the graduation due to his anxiety issues. The College was in compliance with legislation and also followed a social model of disability in that the college changed the education environment to suit the needs of the student. As a result, this young man achieved his lifelong dream of being a teacher, got a permanent, pensionable job and is a great asset to the teaching profession because of his sensitivity to the issue of the social inclusion of students with special education needs in particular those students who may have mental health or anxiety issues.

Mark was unusual in that he already had considerably teaching experience as an unqualified teacher. Applicants to ITE with non-visible disabilities will need open minded support in negotiating school placements.

The Teaching Council Ireland set out requirements for teacher registration and criteria and guidelines for programme providers (**www.teachingcouncil.ie**).

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Webinars on a range of subject areas are also available on the ECU website www.ecu.org.uk

Information on teacher registration and guidelines on school placements are available at **www.teachingcouncil.ie**

University College Dublin Develops a 'Bridge' with a New Access and Lifelong Learning Centre

Anna Kelly

Anna Kelly, is Director of Access & Lifelong Learning at University College Dublin. She is undertaking a doctoral programme in Inclusive Design at the UCD SMARTlab, researching factors associated with diversity in Ireland's universities. She is a member of the Executive Board of the European Access Network. Anna has held a number of posts, including home economics teacher with St. Michael's House, later being appointed as Centre Principal. She also held the post of Regional Director with the National Rehabilitation Board, before moving to FÁS, where her role was Director, Curriculum & Quality Assurance. She is a qualified secondary teacher and holds Master's Degrees in Management and Education, respectively.

University College Dublin's new Access & Lifelong Learning Centre (ALL), offers a state of the art facility, designed as a 'bridge to the university' for students from a diverse range of backgrounds and circumstances. The new centre is located in the James Joyce Library Building. This highly visible position in the main student thoroughfare signals the importance the university attaches to widening participation and student diversity. The Centre showcases Universal Design in practice and its design, layout, features and facilities are intended to be a reference point for future campus development projects and was designed by Lawrence and Long Architects in collaboration with UCD Buildings & Services.

The ALL Centre takes its inspiration from the late Ronald Mace, the renowned architect who challenged the prevailing view of design, which assumed a 'typical' or 'average' user and discounted those not considered as 'normal'. Mace's concept of Universal Design focuses on designing for all people, which means designing buildings, products and services to be usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life (Mace 1998). The resulting design clearly demonstrates the realisation of this concept in this wonderful, bright and welcoming facility.

Over many decades, enthusiastic and committed staff members have developed a comprehensive suite of specialised services and supports to enable a diverse range of students to enter and participate in the university. A wide range of pre-entry initiatives

is available, such as supplementary and alternative admissions routes, including HEAR (Higher Education Access Route), DARE (Disability Access Route to Education), Mature Years, as well as Open Learning, which is developing pathways to part-time undergraduate education. A programme of work to ensure ease of access to campus buildings and facilities is also underway. The ALL Centre reaches out to the wider community through a wide range of initiatives, including Future You, which offers a mentoring and academic support programme to DEIS schools, and Mature Years' Access courses that, on completion, guarantee access to undergraduate study in UCD.

For learners who long to continue their development, we offer numerous lifelong learning opportunities, some of which are offered in partnership with cultural institutions. Ensuring the students' transition and participation in university life is critical and our approach includes offering needs assessments, specialised guidance, learning, technology and financial supports. We also ensure that students are linked to the university's extensive range of academic and personal services.

A critical aspect of our work is the promotion of mainstreaming and inclusion through Universal Design. This involves working with academic and professional colleagues to design programmes, policies and services, for use to the greatest extent possible by everyone, regardless of their age, ability, or status in life.

Anna Kelly

Over the coming months and years, the UCD Access & Lifelong Learning Centre will further develop the concept of the 'bridge to the university', drawing on inspiration from the work of Ronald Mace to inform and shape our services and approach. Applying the principles of Universal Design to our services in the ALL Centre, offers us a new narrative and opportunities to re-imagine and see our students through a different lens. Were we to view the so-called 'non-traditional' student not according to her equality category, but rather through the lens of service user, what would the service design implications be? How would our services differ? Are there similarities in student needs regardless of equality category? Do some students from diverse backgrounds need particular supports delivered in a particular way?

UCD has a long tradition of extending education opportunities dating back to Newman: building on this work, we are endeavouring to re-imagine the future. We have begun this next chapter in our journey of discovery and enhancement in a wonderful new facility: it will surely serve to inspire, enthuse and challenge.

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Excerpt from a presentation made by Ronald L. Mace, FAIA, at **'Designing for the 21st Century: An International Conference on Universal Design,** June 19, 1998, Hofstra University, Hempstead, New York.

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Association for Higher Education Access & Disability

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A Review of Inclusive Education & Employment Practices

AHEAD, the Association for Higher Education Access and Disability, is an independent non-profit organisation working to promote full access to and participation in further and higher education for students with disabilities and to enhance their employment prospects on graduation.

AHEAD provides information to students and graduates with disabilities, teachers, guidance counsellors and parents on disability issues in education.

AHEAD works with graduates and employers through the GET AHEAD Graduate Forum and the WAM Mentored Work Placement Programme.

AHEAD coordinates LINK, a worldwide network of professionals promoting the inclusion of students & graduates with disabilities in Higher Education managed by 6 European partner organisations.

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